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# N.A.A. BULLETIN

*September 1959*

*In Three Sections*
*Section 1*

## IMPACT OF INCOME TAXES ON PLANNING

## DEPRECIATION-ASSOCIATED PROBLEMS

## A PROGRAM OF REPORTS

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## BETTER ACCOUNTING FOR:

*Foundries—Construction Equipment*

# N.A.A. BULLETIN

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# How We Plan to Improve Our Costing of Construction Equipment

by AMADO CAVAZOS

IN HEAVY CONSTRUCTION, the costs related to ownership, maintenance and operation of construction equipment constitute a major percentage of the total project costs. Consequently, it is most important to properly identify and control such costs and equally important to develop cost data in such a uniform manner that the statistics developed can later be used advantageously for management decisions and particularly as an aid in future bidding. A review of the various practices indicates that there is needed a more efficient method of identifying and controlling equipment costs, of allocating such costs, and of obtaining uniform statistical data. The apparent lack of success in accumulating uniform equipment costs can be attributed to a great extent to lack of consistency in two areas, namely:

1. The concept or definition of what properly constitutes equipment costs.
2. The application or allocation of such costs as between job distribution items, job overhead, and/or general overhead.

Theoretically, it would seem that the ideal procedure would be to charge to a job and to a specific production item all costs incurred as a result of the use of equipment on it. Attempts to implement this theory, however, can lead to glaring inconsistencies and inequities in cost distribution. Two examples serve to illustrate this point:

1. Two jobs each have 100,000 cubic yards of excavation to move. Each job accomplishes the work in the same number of hours with identical types of equipment. However, on Job A the equipment used is company-owned, while on Job B the unit is leased on option and eventually capitalized. Company rental rate for the period of use is one-half the amount paid the equipment dealer for the unit that is leased and purchased. Is it proper to say that the cost per yard was twice as much on Job B as on Job A? What are the cost facts in this illustration if Job B is bid on the basis

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**AMADO CAVAZOS**, San Antonio Chapter, 1953, C.P.A., is Treasurer of H. B. Zachry Company, San Antonio, Texas. Mr. Cavazos has been with the same company for approximately 30 years, the last 23 years as Treasurer and chief accounting officer. He holds a BBA degree from St. Mary's University, where he is presently doing graduate work in economics.

of using company-owned equipment (thought to be available) and eventual unavailability is caused by bad breaks on the job from which the equipment is to be released? Are such excess costs properly considered a job item cost, a job overhead cost, or a company overhead cost?

2. Jobs C and D each also have 100,000 cubic yards of excavation. On Job C it is possible to work uninterruptedly for one whole month and a unit of equipment moves all the dirt in that time. On Job D, with the same amount of equipment in the same time, bad weather makes it possible to move only one-tenth of the yardage moved on Job C. Is it proper to record as excavation costs on Job D a figure ten times greater than on Job C? What is the true nature of such stand-by costs?

The problem of equipment costs is obviously a complex one. This discussion is divided into sections dealing with the definition of equipment costs and the proposed method of allocating such costs. The mechanics of these procedures, which have been developed, are not included, due to space limitations. In each case an effort is made to explain and evaluate present practice and to define the objectives sought under the proposed system. The "present practice" used for accounting for equipment costs referred to is but one of many sometimes used; however, it embodies the concept of rentals in lieu of direct costs (a standard cost concept). This concept, it appears, is embodied in most methods presently in use. The "present practice" is the method presently being used by several construction firms known to the author.

## How It Is Proposed to Rectify Deficiencies in Current Practice

Under present practice, equipment costs have been considered to include depreciation and repairs. Both of these types of costs have been accumulated in the equipment account and subsequently re-distributed to job costs through the medium of the inter-company rental payrolls. As a result of the present study of equipment costs, it has been determined that the field of equipment costs really consists of three types of costs, namely: ownership costs, rental costs, and operating costs. Each of these is discussed separately below.

*Ownership Costs*—Under the present system, ownership costs have consisted merely of depreciation on equipment owned by the contractor. It is now proposed to include as part of ownership costs, in addition to depreciation, a charge equal to the interest cost on the total amount invested in equipment.

*Depreciation*—The largest single item of ownership costs is, of course, depreciation. In this area, it is proposed to make a radical change. In the past, the

amount of depreciation considered as the cost for the year has been the amount actually deducted in the Federal income tax return. Inasmuch as recent changes in tax regulations have permitted the use of the so-called declining-balance method or other accelerated methods of calculating depreciation, this has resulted in the amount of depreciation on like pieces of equipment varying with the age of the unit. Considering that it is assumed that all owned equipment is kept in good operating condition, it is felt that, for the purposes of identifying costs as equipment costs, it is more informative and practical to use a level rate of depreciation on all equipment, regardless of age. The proposed new system provides for such a straight-line method of determining depreciation for cost purposes while, at the same time, the amounts shown on the Federal income tax return will continue to be those calculated in accordance with past practices.

*Replacement vs. Original Costs*—Another deviation from present practices in regard to ownership costs is that, in the past, the amount depreciable was always considered to be the original cost of the equipment, regardless of its replacement cost. In the new procedure, the amounts considered as "cost" will, in all cases, be the cost of a like item at the time the cost calculation is made and not what was originally paid for the item. Replacement costs will be reviewed not less than once a year in order to keep the inter-company rental rates up to date and on a realistic basis. Justification for using replacement costs, rather than original costs, lies in the fact that it is realistic to require current jobs to replace the proportionate cost of the amount which will have to be paid out to replace the unit of equipment the job is wearing out.

*Treatment of Under/Over Absorptions*—Under the present practices, the difference between statutory depreciation and repairs, on one hand, and the amounts charged to operations as inter-company rentals, on the other, is treated in many different ways, usually dictated by tax considerations. It is suggested, however, for accounting purposes, that the inter-company rentals remain as the official equipment costs for the year, with any variance charged as a separate job overhead item.

*Rental Costs*—The cost of rented equipment is, of course, the amount actually paid to the lessor of such equipment. To that extent, there is no change in concept of equipment rentals as costs. The change proposed in the handling of rented equipment costs consists of differentiating between the normal cost to a job item for the use of equipment, as measured by the regular company rental rates, and the excess cost occasioned as a result of not having company-owned equipment available and the necessity of renting such equipment from

another party. In brief, it is proposed to charge job production items with an amount equal to what the cost would have been had company-owned equipment been available, with the excess being absorbed by the job in a special overhead account.

*Operating Costs*—Under present practices operating costs of equipment (which are allocated back to operations through inter-company rentals) consist exclusively of repairs and tires. Certain other costs related directly to the operation of equipment and which most equipment manufacturers consider as part of the operating costs are, at present, not considered equipment costs but are charged directly to job items as costs other than equipment costs. These allied costs are:

1. Fuel and lubricants
2. Labor cost of servicing and lubricating equipment
3. Equipment supplies, such as grader blades, cable, etc.

Under the proposed system, studies will be made to determine what the amount of these incidental costs would be for each major type of equipment in terms of hours of usage. Use would be made of the recommendations and findings of the various manufacturers, most of whom have determined what the average cost of such incidental costs are per operating hour. These costs, translated to rates per hour, would be added to the estimated repair and tire costs (also per hour) to arrive at a total rate per hour which would include all such operating costs. It would be such total costs which would be charged to the production items through the medium of the inter-company rental rates. This means that each production item to which equipment rental charges are made for the use of equipment will automatically bear its pro-rata cost, not only of the maintenance costs (repairs and tires) but also of the operating costs described above. Provision will be made for controlling these allied costs.

*Repair Costs of Company-Owned Equipment*—The largest single item of operating cost is, of course, the repair costs. In this area, another change is proposed in order to correct an inconsistency in the present system. At present, if repairs are done in a central shop, the amount charged against the individual piece of equipment as repairs is the total of mechanic's labor, parts, and the pro-rata part of the shop overhead cost. On the other hand, when repairs are performed in the field by so-called job mechanics, it has been the general practice to charge against the equipment's repair account only the cost of parts, while the mechanic's labor has been absorbed by the job as a job overhead item entirely unrelated to equipment costs.

This has had the effect of making later comparison of repair costs on like

pieces of equipment entirely unreliable, since the amount of recorded costs would depend on whether large items of repair were performed on the job site or at the central shop. It is true that, in certain cases, provision exists for charging back to the equipment department (central shop) the labor costs of particularly large repair labor costs, but this has required special procedures which, in the final analysis, have been ineffective. Under the new system, the entire cost of repairing company-owned equipment will be considered repair costs and, as such, chargeable to the equipment. It is felt that, by the use of this method, the cost records and the statistics will be more uniform and, consequently, of much more value than they are now.

*Repair Costs of Rented Equipment*—Inasmuch as the job production items will be charged with a rental rate per hour of usage of rented equipment at the same rates as for company equipment and since such rate will include provision for cost of repairs and other operating costs, costs incurred in repairing rented equipment will not be chargeable to the production items, since such action would constitute a double-charge. The cost of repairs of rented equipment (which is not later captured through exercise of an option) will be considered as a job overhead cost, rather than a job production item cost.

*Repair Costs of Equipment Acquired Through Exercise of Lease Option*—Another area of cost records which will be improved under the new system is that pertaining to the cost of repairs on equipment which is used for some time on jobs as leased equipment and which, because of the existence of an option, later becomes company-owned equipment. In the past, all repair costs applicable to such items during the time prior to exercising the option have remained as a direct job cost and were not incorporated in the repair cost history of the unit in question. Under the proposed system, whenever a piece of equipment changes status from leased to owned equipment as a result of exercising the option, all repair costs previously incurred on that unit will be recorded as repair costs in the equipment account.

By doing this, it will later be possible to have a complete history of repair costs on all company-owned equipment, regardless of the method of acquisition. The decisions whether to acquire equipment for cash or through the lease-option route will not, of themselves, affect the accuracy of repair cost records of any item of equipment. It is well to mention at this point that, if a job is bid on the basis of using rented equipment and it is desirable to have the final job cost include all costs applicable to this equipment (whether later capitalized or not), the procedure described above for accumulating all repair costs in the equipment account will not necessarily disturb the total of the job cost for purposes of comparison with bid estimates.

*Fuel and Field Maintenance Costs*—It has long been recognized that the cost of fuel consumed while a piece of equipment is "moving dirt" should be charged to that item of work. In the past, efforts have been made to identify the individual usage of fuel by piece of equipment and to charge such fuel to the production item. This method of allocation of such costs, however, is too burdensome and, in many instances, has been discontinued. Under the present system, fuel is carried as a job overhead item on most jobs and field mechanics' labor is treated likewise. Under the new system, it is proposed to consider fuel and lubrication costs and the cost of equipment supplies such as cable and grader blades as equipment operating costs.

As such, the rental rate per hour for each piece of equipment will consist of a factor for repairs and tires and separate amounts (per hour) for fuel and for equipment supplies. This means that, as a piece of equipment is used, the production item on which it is used will bear a rental charge which is designed to recover these operating costs. To the extent to which the inter-company rental rates correctly reflect such costs, the production items will bear all such variable costs of operating the equipment. While the inter-company rental rate will now include a provision for repair and other costs and the repair costs will be accumulated as before by piece of equipment, the other costs (fuel, supplies) will not be so accumulated, but will be controlled within the framework of job costs.

## Charging Equipment Costs to Jobs and Overhead

The previous section of this article has dealt with the re-defining of the concept of what constitutes equipment costs. Equally important is the question of the correct application of these costs to the various operating accounts, such as job production items, job overhead, and over-all overhead accounts. The proposed system calls for some departures from previous practice in this respect. In connection with application of equipment costs, one of the most important details to remember is that, whereas under the present system there is one inter-company rental rate on the basis of which charges are made to jobs and which is to take care of depreciation and repairs, under the proposed system there are, in effect, two separate and distinct rental charges made for each piece of equipment each month. There will be a rental rate which will be charged to recover ownership costs and one which will be charged to recover operating costs. The former will be a function of time (days or months of assignment to a job) and the latter will be a function of usage (actual hours used on the job). Although this may sound like unnecessary additional work, it must be

borne in mind that the preparation of inter-company rental payrolls on tabulating equipment will make the operation relatively easy to handle.

*Ownership Costs*—One of the most significant changes in regard to application of ownership costs is that ownership costs, as now defined, refer to depreciation based on the replacement cost of any piece of equipment rather than to the original cost of the item as heretofore. Also, in the past, the validity of the inter-company rental rates was measured by the accuracy with which the rates, as applied during the year, absorbed the depreciation actually taken by the company on its Federal tax return. The 1954 changes in tax regulations which permitted using depreciation methods with accelerated rates in the earlier years of the equipment's life had the effect of applying different effective rates for the same piece of equipment during different years. Although this method may be advantageous for tax purposes, it certainly does not lend itself to use for long-range cost records or control.

The new system provides for depreciation at a level rate each year, regardless of the age of the unit of equipment. This will eliminate from the calculation and application of equipment costs the element of chance caused by the varying amount of new equipment purchases in the various years. In other words, for cost control, equipment is considered to depreciate at the same rate each month of its entire life. Another advantage of disassociating equipment costs from the Federal tax return deduction is the elimination of the so-called book value as an influencing factor in the evaluation of equipment being considered for sale or trade.

*Ownership Rental*—Two methods of handling ownership rental within job costs are suggested for use. One method is to consider this cost as a job overhead cost and to carry it as inter-company equipment rental in the overhead section of the job cost report. Under this method, ownership rental costs would not be applied to production or job items. The theory behind this method of handling equipment ownership costs is that such costs, in effect, represent depreciation, and depreciation is a function of time, regardless of production. Thus, in the event of non-production because of bad weather or for other causes, the job as a whole will properly bear the cost of such stand-by time and the rentals will not distort the unit cost of production of the line items, as would be the case if ownership rental were charged to the items. An analogy can be made to the case of a small contractor with only one set of equipment and one job. In that case, the operating costs of the equipment are charged to the job; the depreciation is shown as an overhead deduction for the company as a whole.

The other method suggested for handling ownership rental within job costs is to first charge the job overhead section for the entire amount of inter-

company equipment rentals. However, instead of letting all the charge remain there, an equipment rental report would be prepared for all such equipment, and the job distribution items charged for the actual usage of the equipment at established rental rates. The amount of intra-job rentals would be credited to the job's inter-company equipment rentals overhead account. This method would not only reflect equipment ownership costs by job distribution items, but the over/under absorbed amount in the job overhead section would reflect costs resulting from idle time because of bad weather, stand-by, or other cause.

*Equipment Operating Costs*—The second type of inter-company rental charge, which is designed to recover the costs of maintaining and operating the equipment, will be charged to the individual job cost or production items on which it is used on the basis of hours of actual usage, with no charge being made for the time during which the equipment is not actually working. This is in line with the theory that the equipment is not wearing out when not working and that, to require a job to provide a reserve for repairs during such non-working time, is not only inequitable but also produces erroneous cost records. As an example, on one of the company's jobs, much of the equipment generated rentals (under the old system) which included provision for repair costs for long periods during which such equipment was not used due to bad weather. It is questionable whether, in such cases, the job should bear charges that later result in "over-absorption" of equipment repair costs. As a result of charging only operating costs to the line items, all fixed costs, such as depreciation, will be borne by the job while all variable costs, such as repairs, will be applied to production items. As explained earlier, the variable costs will include repairs, tires, fuel, lubrication, field maintenance (not charged to repair costs) and equipment supplies.

*Cost of Rented Equipment*—At present, the entire cost paid to a lessor for the use of equipment is being charged to the item of distribution for which the piece of equipment was obtained or it is allocated between the various items if it is used on more than one item. Under the proposed method, the entire amount paid to the lessor will be charged to the job's overhead item, rented equipment. However, instead of letting all the charge remain there, all rented equipment will be treated (as far as the job is concerned) as if it were company-owned equipment. Reports will be made of the actual usage of each such equipment applicable to the job cost items in the same manner as will be done for company-owned equipment. An equipment rental report in the same form as the one covering the company equipment will be prepared for all such rented equipment and the job distribution items will be charged for the actual usage of such rented equipment at the same rates as for company-

owned equipment. The amount of such rentals will be credited to the job's rented equipment overhead account. Through the use of this method, two objectives will be accomplished: the job cost items will bear a uniform cost for use of any equipment of like kind, whether owned or rented, and, at the same time, the job as a whole will have a record of the total amounts spent on rented equipment for control and comparison against the estimated amounts of these third-party rentals.

### *Practical Improvement in Equipment Costing*

The above proposed method for handling equipment costs of a construction company has much merit. The advantages have already been set forth. They include more complete costs at more up-to-date levels, more useful for pricing and comparisons. Procedures have been developed which make the method practical in its application.

## *Reporting With an Operating Viewpoint*

by GEORGE SUTTER*

THE TRADITIONAL POSITION of the industrial accountant is that of a "somewhat independent" reporting medium for management. This means reporting to all levels of management. He is supposed to be a detached independent, one who neither judges nor appraises the job performed by those upon whose operations he reports. His job is to report facts and to leave the job performance evaluation to the line organization. If this task is to be most effectively carried out at maximum benefit to the company, the accountant's reports should be interpreted in the light of the same precepts.

It is at that point—the interpretation by the reader—that the industrial accountant's efforts may lose some of their effectiveness. The operating man does not read the report through the accountant's eyes.

The universal tendency of all of us to appraise personal matters from an emotional, rather than from a logical, standpoint is inevitably in conflict with the generally accepted logical approach to the accumulation of cost data. Whenever his reports indicate what may be judged by others to be poor performance, the accountant should not be surprised to learn that the one whose performance has seemingly been judged immediately reacts emotionally to the obvious source of his difficulty,

*Assistant Manager, Works Accounting — Budgets and Analyses, Indiana Harbor Works, Inland Steel Co.

that is, the report and the accountant who prepared it. By this same reasoning, one realizes that the reflection of good performance in an accounting report is not related to the accounting report or to the accountant but is taken as reflecting the excellence of the person whose performance was reported. These reactions are not matters of accounting techniques nor managerial philosophy; they are inherent human attributes.

However, we accountants proclaim our rightful place on the management team by providing a service function to *all* levels of management to the end that more profitable decisions may be made for the ultimate benefit of the company as a whole, regardless of the emotional evaluations placed upon our efforts. The possible detrimental effect of some of the emotional reactions to our reports can be minimized if the people who use our reports are fully aware of their content and of the details which form the background of the report. This goal of understanding can be attained in at least two ways. One way would be to require all operating personnel to be accountants. Another way would be to require all accountants to be operating personnel. These two possibilities are obviously unattainable. It is, therefore, the accountant's job to make sure that he employs a middle way and develops reports and data in terms of the way in which the operating man works.

In the budget process, this means a very flexible policy with regard to the selection of criteria upon which various elements of cost are budgeted. It requires close cooperation and extensive personal contact with the various levels of management to make it possible for the accountant and the operator to gain a better understanding of the problems the other must face.

In the reporting function, the requirement is that costs be reported in terms which are readily understandable by the operator. The statements must reflect what he has done during the period covered by the report. They must be presented in sufficient detail so that he can determine from them answers to questions about his operation. This means that such matters as accruals, provisions, allowances, and other accounting convenience techniques must be completely understood by the operating man. Not only must he understand them but he must know what effect his decisions have upon them.

In both cases, the goals can be accomplished by working more closely with operating personnel on a day-to-day basis, by participating in their meetings, by projection into their area, and by keeping accounting policies flexible enough so that accounting techniques can be readily adapted to reports which reflect the operating man's point of view without detracting from the requirements of independent reporting.

# *Developing an Effective Cost Analysis Staff*

by MICHAEL R. SAKSA

IN RECENT YEARS, the accounting function has been expanded to incorporate diverse systems for reporting and controlling expenditures. The result is that accounting has become a many-faceted profession, reflecting a number of specialized activities. Among these is cost analysis, that phase of accounting which has now taken the accountant beyond interpretation and into the realm of creative effort. This article is intended to describe in some detail the development, functions, method of operation, and other pertinent characteristics of the cost analysis activity.

## *Definition of a Cost Analysis Group*

An analytical group is composed of individuals whose primary functions are to render service, train other individuals, interpret documents and techniques, and operate as a liaison group in helping management to evaluate the soundness of methods of operation, cost structure, expansion plans, and other proposals dealing with the business organization. The size and level of activity for an analytical group may vary from a specified, limited assignment to that of a range of all-embracing functions, dealing with operations, costs, sales volume, and profits.

First is the service function, rendering assistance to an individual or group of individuals at various echelons of management. Service includes a prompt answer to a particular point or question which may not be readily available in the existing documents or reports. It may represent an attempt to help management forecast the most profitable level of operation for the company. Service may represent a warning finger pointed at an area of trouble, a "hot spot" in the cost of a particular product or point of manufacture. Often, these critical areas are hidden in the averall cost of operating, although eventually reducing the firm's profits. This watchdog function pinpoints, by means of independent analysis, areas which require more intensive scrutiny or control in order to eliminate or reduce unfavorable variances in operations and cost.

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**MICHAEL R. SAKSA**, Calumet Chapter, 1956, is Supervisor of the Cost Analyses Section of the Works Accounting Department, Inland Steel Company, Indiana Harbor Works East Chicago, Indiana. He joined the company in 1952, and assumed his present position in 1956. Mr. Saksa is a previous contributor to the *Bulletin*.

There are many facets to the service function which the analytical group performs. We have mentioned but a few.

Next is the training function, a fairly important part of the structure. This includes the training of individuals within the group for future expansion of the analytical activities of the group and the training of individuals for, and from, other operating or service units. Perhaps more than any other individual, the cost analyst has the day-to-day opportunity of reaching into every department of the organization to review methods of operation while seeking satisfactory explanations or answers to particular questions or proposals. Introduction to the various operations of the firm allows for the maximum education of an individual in all levels of company activity. As a result, even a short tenure of service in cost analysis probably is worth more than an intensive, long-term stay in any one other level of activity.

Interpreting documents and procedures is another important job performed by the cost analysis group. One phase of this can be called "spreading the gospel," educating individuals in extracting the maximum value from the various documents which the accounting end of the business periodically publishes.

Why do these documents exist? What do they tell management? What yardstick of measurement can be applied to the operation as a result of utilizing these documents? How do we use the data correctly? The analyst can be extremely valuable in providing a logical answer to these questions and can stimulate curiosity and interest in the useful application of many of these reports as an instrument of cost control. These controls are particularly significant in times of recession.

Also, management is sometimes deficient in the knowledge and understanding of established accounting rules and procedures. This lack of understanding often leads to distrust of the policies and techniques applied in cost control. The analyst can be helpful in interpreting these policies and techniques, in time reducing this area of dissension between the operating and staff functions.

Finally, the analysis section may serve as a liaison unit, information center, or clearing house for operating and cost data. As management becomes more familiar with the analytical function, it will learn to depend on the section for data which might otherwise require a series of phone calls or requests until the proper information were uncovered. This saves valuable minutes of the executive's time, minutes which can be directed to other phases of the business activity.

To summarize, the role of a cost analyst is that of a contributor in constructing landmarks and reference points as a guide to the executive in his responsibility to set a proper economic course of action for the company.

### *Determining the Unit's Size*

How large shall the analytical unit be? Size of the organization is important in terms of dollar expenditure for salaries and, conversely, in terms of offering a unit large enough to expedite the handling of a substantial number of requests. In essence, the size of the force depends in large part on the size of the company. Obviously, the larger the company, the more frequent the requests for service and the more comprehensive the type of requests. In this article, we are formulating a fairly intricate group in terms of size and level of authority. This can be modified to fit the size of business or industrial unit. However, progressive management in a relatively small firm may insist on a function involving a large number of personnel with wide experience, as an additional aid in guiding the future course of the company.

In some cases, the analytical force may consist of no more than two men, a senior and a junior analyst. In others, it may involve only a portion of the daily activity of several individuals—a part-time analytical function. In our case, however, we are dealing with a full-fledged group consisting of a manager at the executive level, seniors and semi-seniors reporting to him, and juniors or trainees.

### *Establishing Personnel Requirements*

Once the size of the cost analysis staff has been determined, personnel qualifications for each level of responsibility must be established. The executive or managerial level requires an intensive background of experience, above-average intelligence, proven leadership and organizing abilities, a fundamental flair for diplomacy, and fluency in report writing. It is no haven for the mediocre.

The manager must be able to visualize the problem and to determine the approach which should be followed in developing the analysis. Consequently, he must have extreme familiarity with the manufacturing and service operations of the organization. He must know the normal flow of material and services intimately, in order to select the areas requiring the most comprehensive review. Otherwise, the final results of the analysis may be too distorted by abnormal conditions or practices to be of more than limited value. He should also be thoroughly familiar with the accounting function, its methods, and its procedures in order to present the results of his analysis in terms of the company's accepted accounting practices.

He must be able to set up the work in his section in a logical, simple style which can readily be "farmed out" through the senior and junior levels. He

should determine the scope of the problem, develop the method of approach, estimate the time and personnel requirements, and indicate to his subordinates the answers which he feels should be forthcoming as a result of the investigation.

He should function as a trainer and developer of subordinate personnel, able to delegate responsibility and set up personnel assignments but still reserving the authority to pass final judgment on the effectiveness of the completed analysis. He must be capable of giving criticism of the completed assignment without arousing resentment in his subordinates. If he follows a policy of letting his men know at all times what he expects from them, he can elicit a favorable response to constructive criticism and can reprimand effectively, since the manner of work performance can be stepped-up or improved with less resentment, once the goals are adequately identified.

The manager also must be able to take advantage of the abilities of others. For example, a subordinate with a ready wit or one who is extremely compatible might be selected to deal with certain mill personnel who are normally antagonistic toward questions involving their operations. This type of operator often imagines an implied criticism of his methods whenever an analysis is conducted in his area. An analyst with extreme tact or good humor might overcome this animosity. Similarly, other individuals might be especially talented in digging through a maze of operating reports to find the pertinent data required for a conclusive analysis.

Information and assistance for the successful completion of an analysis is often derived from a wide variety of departments and other operating groups. The manager must be able to conduct meetings with various interested staff and operating groups, judiciously leading the discussion into the proper channels in order to formulate a cohesive approach and to expedite solution of the particular problem, explain its ramifications, and tactfully recommend logical assignments and responsibilities for the various groups involved. He must work in unison with other department heads, dove-tailing their efforts with those of his group, and suggesting alternative approaches if data is not available or applying tacit pressure if it appears that the investigation is bogging down.

This conference and group meeting technique is especially valuable if the cost analysis group is not too deep in number of personnel. In enlisting the services of other groups, the manager is, in effect, requisitioning additional qualified personnel on a temporary basis. This permits more intensive coverage for each analysis inquiry and concentrated effort on more than one inquiry at the same time.

The manager must have diplomatic ability in order to prevent friction from developing between the various groups involved or between the analysis section and any other group as a result of disagreements arising from diverse views and opinions on optimum operating levels, costs, etc. He must be capable of culling these views and opinions to separate the wheat from the chaff. In this case, a specialist in a limited area, although extremely capable as an administrator in his own area, might be highly unsuitable as manager of a cost analysis group, due to limited ability to deal with others.

Also of primary importance is the problem of determining the priority of similar or simultaneous requests for analytical service from several management levels. At this point, the manager's diplomatic *savoir faire* again comes into play. He must decide the urgency of each request, although in some cases the decision is automatically made for him due to the relative importance of the level of management involved. In other cases, he must tactfully suggest a combining of the two requests into one report or the temporary side-tracking of the less urgent of the two.

Finally, the manager must be able to express himself fluently in writing. He must have the ability to describe the situation or request in a lucid manner, support his approach, develop a logical interpretation of the results, and draw up a sound conclusion, placing special emphasis on the cost effects of the subject in question. Also, the report may be beamed at several levels of management. To talk to the operator in his terms without overpowering upper levels of management with a mass of technical terminology requires a nicety of approach which becomes almost an art.

Reporting to the manager are the seniors and semi-seniors. These might include supervisors, assistant supervisors, and cost analysts. They serve to facilitate the manager's execution of his official duties by absorbing some of the semi-routine and less technical aspects of responsibility. They should have executive potential and should be qualified to step in and assist or substitute for the manager at certain conferences and in certain situations. They should rate favorably in such personnel characteristics as skill in handling people, since they will be required to share supervisory responsibility with the manager. They should have personality traits which will promote good morale in the work force and inspire greater productivity. In this area, loyalty to the manager is of prime importance. A persistent dissenter or one who "snipes behind the boss's back" can be a potent force in destroying group morale and creating unfavorable attitudes in the subordinates.

The senior must be capable of operating with the minimum of supervision.

He should minimize the amount of routine questions which the manager is required to resolve. On the other hand, he should be able to recognize those problems which require executive judgment or decision.

He should constantly be improving himself in terms of the necessary qualifications for the executive level. He should be able to take an outline developed by the manager and break down or parcel out the assignments to the various subordinates. He should be familiar with all phases of the manufacturing or technical side as well as the accounting side of the organization, although not necessarily in the same degree as the manager.

The senior should be a capable report writer. He should be able to express himself in writing in a manner which, with minor alterations, is suitable for presentation. In this area, he should also be able to accept constructive criticism of his written efforts and be able to recognize it as such. This is especially significant, since the reports of the analytical group normally receive fairly wide publication through various levels of management. Consequently, each report as presented must be able to withstand the most rigid form of scrutiny.

The next level of organization is that of the junior or trainee. Here, some of the criteria are clerical accuracy, familiarity with published reports, and mechanical ability or ability to operate office equipment. However, the junior should have potential for advancement. In this sense, he should have the ability to recognize the disproportionate items and the inquisitiveness to follow up and determine their relative importance in the averall analysis. The junior is being groomed for the senior level as the senior is groomed for the executive. However, he will work under the close supervision of the senior or manager and will not have final responsibility for decision making. Nevertheless, he should have the ability to handle simple projects requiring minimum coordination. For example, he should be able to deal with repeat projects in which the subject under study is similar in many major points to projects completed in the past.

Finally, the junior or trainee must be capable of handling simple inquiries and questions related to available operating and cost data. In this sense, he can assist in establishing the analysis function as the liaison group or information center previously mentioned in this article.

### *Building the Analysis Unit*

The organization cannot be built as simply as one would build an erector set or bake a cake, taking the proper ingredients, mixing them in the proper

dimensions and to the required consistency, and eventually arriving at the desired results.

Often the organization represents an evolutionary process through which the analytical function has been carried out as part of the normal responsibilities and duties of one or more individuals. Eventually, the need for more frequent and intensive analyses outstrips the ability of the individuals to handle it on a part-time basis. They find that more and more, and eventually all, of their time is absorbed in this activity. A natural outgrowth of this is the construction of a formal analysis group, built around these individuals.

On the other hand, management may feel the need for this activity as the company expands and may plan the formulation of a definite analytical function. This may start as a fairly small group and expand to a full-fledged department as the requests for analysis increase in scope and number.

Qualified personnel are required to staff the analysis function. A ready source would be the individuals previously mentioned who were devoting some of their time to work of a semi-analytical nature. Another source might be individuals working in the accounting area who showed special ability in dealing with out-of-the-ordinary problems or whose personnel folio indicated above-average intelligence and other qualities which could prove assets in the work of an analyst.

Another source of personnel is the interview method. Interviews with candidates from outside the accounting area or outside the company often uncover highly satisfactory analysts. The college campus interview provides a fertile field for qualified personnel.

The early life of the cost analysis group is usually a trial-and-error period and the personnel turnover may become quite alarming. Individuals originally selected for the group may subsequently reveal unfavorable character traits which prevent full utilization of their abilities. Still others may become dissatisfied with their rate of promotion or may feel that they can improve their status by transferring to other areas or going to other companies. Probably the prime requisite in selecting personnel for the cost analysis group is that of choosing people capable of handling non-routine functions as a matter of routine.

The last phase in building the organization is that of training the individual. Generally, this represents on-the-job experience. A junior will be assigned to work with a senior analyst or will be given relatively simple assignments until he becomes more familiar with accounting procedures, documents, mill terminology, etc. He may be transferred to another section or to another phase of

accounting on a temporary basis in order to view at first hand the activities of other areas of the accounting organization. At the same time, he learns about the availability of information and data which may later prove useful in his analysis work. Training also should encourage self-improvement projects or additional schooling. The availability of company-sponsored evening adult education courses or other off-the-job training should be brought to the attention of members of the group periodically.

### *Modus Operandi*

Although the various cost analysis requests may deal with a variety of subjects, a common operating pattern is applied to each.

The first step is to define the problem. This includes determining what is needed and what will be done with the results. Depending upon who has asked for the analysis, a realistic approach should be followed which will permit turning down requests not deemed sufficiently important to warrant the concentrated effort required.

Closely allied with defining the problem is determining the scope of the approach. Often the scope will depend upon the time factor involved. A quick but "rough" answer may often be more satisfactory in terms of decision-making than a refined approach which, although 100 per cent accurate, is two weeks too late to be of value. In this case, the criterion is not the per cent of accuracy but the speed with which the problem can be resolved. On the other hand, the margin of profit might be so slim that a 5 per cent error would spell the difference between a favorable and unfavorable proposal. Also, the rapid or brief answer is often misinterpreted due to lack of adequate supporting data. Management tends to extrapolate to too large a degree, considering the narrow range from which to make the extrapolation.

A third factor in the method of operation is that of establishing the approach. Within the group, an outline of activities is required in order to assign areas of investigation, to set up minimum standards of accuracy, and to formulate a picture of the desired results. Assistance from outside the group also should be invited or requested if it is felt that this will lead to a more comprehensive or accurate analysis. The level of management requesting the analysis often will insist that other staff groups participate. In this event, it is desirable to have a preliminary meeting with the initiator of the study and representatives of each of the participating groups in order to establish a common understanding of the problem and to select methods to be applied in resolving it. Sec-

ondary meetings can then be scheduled between the lower echelons of the various groups in order to iron out specific details.

The next significant point is that of agreement on results. Within the analytical group, the senior should review the results of the junior's efforts on a day-to-day basis to prevent misinterpretation of instructions. At various stages of the analysis, the senior should review the early results with the manager to detect unfavorable trends or abnormalities in basic data, approach, etc. Finally, the manager should present the preliminary report to his immediate superior in the accounting organization for evaluation of the approach and the results.

Outside the group, the preliminary report should be presented to other collaborating groups and to operators of the areas involved for their judgment of the validity of the results. Once all interested parties have "had their day in court," the report is ready for formal presentation and circulation to the various levels of management.

The formal presentation may follow any one of a number of popular formats. Certain management people prefer that all of the various details of cost, operations, etc. be presented in a series of schedules. Others prefer a brief report dealing only with the highlights of the problem. Others fall somewhere between these two extremes. As experience with the personal preferences of the various officials is acquired, the analyst will become more adept in his formal presentation.

### *Evaluating the Effectiveness of the Organization*

The final test of the cost analysis function is the effectiveness of the unit. One basis of measurement would be the "batting average" for meeting commitments. How often is a predetermined target date for completion met?

Another gauge might be recurrence of requests. Satisfied customers come back. An increase in the number or technical nature or comprehensiveness of the requests indicates that the effectiveness of the organization is increasing. The results evidently are of value; consequently, the requests increase in volume and scope. Perhaps the best criterion of this can be that, like the housewife, the cost analyst's work is never done. For each request answered, two more come in. He is overly successful. In this case, management is not going somewhere else for answers nor is it operating without the benefit of analysis as an aid in decision-making.

A third and final gauge of the effectiveness of the organization is how the results of each analysis are employed. If decisions are based partly or wholly on the completed analysis, the group obviously is highly successful and worth

its keep. In many instances, however, the results are not completely what management needs for a decision. Often, decisions of major importance require several complete re-analyses of the original request. Nevertheless, the original analysis has served its purpose in that it has pointed up the need for further study before final decision-making. It often acts like a snowball rolling down a hill, gathering momentum and new ideas as it "rolls" through the various levels of management. The end results eventually play a significant part in influencing management's decisions.

### Conclusion

Cost analysis increases the accountant's contribution to better management. It provides the needed facts to help management appraise current operations. It also performs an important guidance function for making decisions dealing with programs and policies for the economic well-being of the organization. It assists in bridging the gap between present operations and future planning. It can be specifically tailored to fit the needs of any size or type of organization. And, finally, it broadens the accountant's sphere of influence, enhances his worth, and transforms him from technician to creator.

# *Depreciation Is Not the Problem*

by RUDOLPH MALANDRO

ONE OF THE PROBLEMS in the current controversy concerning depreciation has been the failure to distinguish between depreciation and other related accounting problems. Many articles have been written on the subject, supposedly from an accounting viewpoint, when, in reality, the authors were primarily concerned with tax deductions, price level adjustments, replacements costs, etc. If accountants have used the term so loosely, should we not expect the general public to have difficulty understanding what is meant by depreciation when used in published statements?

## Depreciation is . . .

Depreciation has a special meaning in accounting terminology and this meaning must be understood by those who use accounting data. Before proceeding with this discussion, let us consider two definitions of depreciation appearing in publications of the American Institute of C.P.A.s and the American Accounting Association.

The American Institute of C.P.A.'s Committee on Terminology said:

> "Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation."[1]

W. A. Paton and A. C. Littleton, writing under the auspices of the American Accounting Association, have stated:

> "Under accrual accounting, depreciation is not a valuation process nor a means of capturing replacement prices from customers; it is simply a step in the process of associating past cost, which measures the

[1] *Accounting Terminology Bulletin No. 1,* "Review and Resume," American Institute of Certified Public Accountants, 1953, p. 25.

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**RUDOLPH MALANDRO**, Akron Chapter, 1957, is Assistant Professor of Accounting, Kent State University. Prior to his current position, Mr. Malandro was special Agent (Accountant) of F.B.I., and Assistant Professor of Accounting, Ferris Institute, Big Rapids, Michigan. He was graduated from Westminster (Pa.) College, Business Administration; also attended Hendrix College (Ark.) and Western Reserve University. Mr. Malandro holds Master in Letters degree from University of Pittsburgh.

planned effort to produce goods or services produced. Depreciation is an expense analogous to a rental charge for available services".[2]

The preceding definitions emphasize the "distribution" or "allocation" of cost. The A.I.C.P.A.'s Committee on Terminology also stated that "definitions are unacceptable which imply that depreciation for the year is a measurement, expressed in monetary terms, of the physical deterioration within the year, or indeed, of anything that actually occurs within the year."[3]

Neither of the preceding definitions of depreciation are fundamentally new or controversial. Similar terminology will be found in almost any accounting text. In spite of this, there is much misunderstanding on the part of those in the business field, in addition to the general public. This is emphasized by comments made in response to a recent questionnaire on price-level adjustment of depreciation, conducted by the A.I.C.P.A.s. Business executives made comments in letters (when they returned their questionnaires) which reflected a lack of understanding of what is meant by depreciation. Some thought depreciation was intended to maintain present capacity of plant and equipment or to provide funds to replace the assets. One specific comment illustrated a common misconception. It stated that:

> "Because depreciation based upon historical costs has not provided sufficient funds to meet replacement costs, industry's reported earnings have been overstated."[4]

Professor Paton relates an interesting example of a similar misunderstanding:

> "Some years ago a New York attorney (a very able chap) was elected chairman of the board of a certain company. He took the assignment seriously and shortly after his election spent a week at the company's office, studying the recent financial report and other accounting data available. Just before returning to New York he called in the controller and executive vice president and told them that he had been carefully going over the accounts and statements and had been shocked to discover that the 'reserve for depreciation' of $14 million was missing. 'I can't find this fund anywhere,' he told them, and then added bluntly, and with a bit of table pounding by way of emphasis: 'I've got to leave for New York, but I'm coming back in two weeks and if that reserve hasn't been located by then someone is going to jail.' The controller was obliged to take time to prepare a funds statement covering the entire history of the company for the chairman's

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[2] *An Introduction To Corporate Accounting Standards*, W. A. Paton and A. C. Littleton, Edwards Brothers, Inc., 1957, p. 17.

[3] *Accounting Terminology Bulletin No. 1, op. cit.*, p. 24.

[4] "Accounting and Auditing Problems," Carman G. Blough, *The Journal of Accountancy*, July 1958, p. 78.

examination and, even though he was disarmed somewhat by the presentation, it is safe to say that he never clearly understood the 'reserve for depreciation'."[5]

Misconceptions concerning depreciation are present not because of but in spite of sound accounting theory. A given amount expended for a fixed asset is generally charged to expense over the life of the asset by one of the various methods of allocation. Nowhere in the cited definitions do we find reason for the following common and erroneous assumptions:

1. The "reserve" should be great enough to replace the assets when its useful life is ended.
2. There is a special fund for replacement of the asset.
3. The asset less the "reserve" represents current value of the asset.

The errors in the above statements are basic:

1. Replacement cost is not a depreciation problem (according to the definitions cited) and the "reserve" referred to is simply the amount of depreciation that has been allocated to date.
2. A fund may exist for the replacement of assets but it would be an unusual situation and, if realistic, the amount would probably not correspond to the dollar amount of the "reserve".
3. The faulty assumption concerning present value is solely due to the failure to understand the "going concern" concept.

Do we want to change the technical meaning of depreciation to conform to the misconceptions held by some people in the business field or by the general public? The computation of depreciation based on historical costs is sound. It may be that we have some of the misconceptions because of the terminology used and the manner in which the data is presented. It would seem to be more realistic to hold to the basic principles and improve the other aspects of the problem.

### *Balance Sheet Presentation of Fixed Assets*

What information is available to the reader of a balance sheet insofar as fixed assets are concerned? The information is usually presented in one of two forms:

1. Single account presentation (net fixed assets).
2. Fixed asset and related "reserve".

[5] "Significance of Depreciation Accounting With Special Reference to Plant Replacement," W. A. Paton, *Two Views On Depreciation*, National Automatic Tool Company, Inc., 1955, pp. 2-3.

A single account presentation of an asset may not provide adequate disclosure of pertinent facts. It must also be recognized that the displaying of an asset account and a related "reserve" account without explanatory notes adds little in the way of useful information for the reader of the statement. Let us assume some basic facts to illustrate two methods of displaying a tangible fixed asset on a balance sheet.

The facts:

Machinery purchased 1/2/49 for $220,000
Estimated useful life—20 years
Estimated residual value at end of 20 years—$20,000
Depreciation method—straight line

The related accounts would appear as follows on December 31, 1958:

Machinery

| | |
|---|---|
| Jan. 1, 1950 | 220,000.00 |

Accumulated Depreciation on Machinery

| | |
|---|---|
| Dec. 31, 1958 | Bal. 100,000.00 |

To use a single account to display the foregoing would result in a presentation similar to the following:

| | | |
|---|---|---|
| Machinery (net) ..... | | $120,000.00 |

An Alternate method of display would read

| | | |
|---|---|---|
| Machinery ..... | $220,000.00 | |
| Less: Accumulated depreciation ..... | 100,000.00 | $120,000.00 |

This illustration is over-simplified, since we are dealing with the purchase of only one fixed asset. Even in this situation, certain basic questions are not answered by either method of presentation. For example:

1. How old are the machines?
2. Are they competitive with newer machines?
3. When will they have to be replaced?
4. What will it cost to replace the productive capacity of these machines?
5. If the machines were to be exchanged or sold, what would be received for the used machines?

These are not the only questions that various readers of the statements would possibly like to have answered. Neither is it assumed that the answers to these questions should necessarily be included in the published statements.

In any event, we must realize just what a particular presentation does or does

not disclose. Many statements appearing in published reports contain more data than shown in the preceding examples. A survey of 600 industrial and commercial corporations published financial reports for the calendar year 1956 disclosed 544 of these corporations stated a basis for valuation of fixed assets while 56 did not.[6] A great majority of the former indicated they valued their fixed assets at cost. To continue with our illustration we will assume the cost basis of valuation is disclosed.

The single account presentation tells us the undepreciated portion of original cost is $120,000. The alternate method of presentation tells us the original cost of the machinery was $220,000; depreciation allocated to date $100,000; and undepreciated cost $120,000. That is all that is disclosed by the presentations and to assume anything else is merely conjecture. However, the fact that the information is sometimes misunderstood can be illustrated by the comments of an economist making a critical analysis of accounting theory. He stated that the single valuation method of presentation is not too informative since one limited to the balance sheet for information would not know "whether the machines were all brand new, or were all nearly worn out, or were of some intermediate age-distribution."[7] This observation is accepted without qualification. The same writer also states that the alternate method of display is superior because "the original cost, the probable cost of replacement, the amount of depreciation that has occurred, the present value, and the prospect of low cash requirements for replacements during the next few years are all told in a simple sum and difference."[8]

In brief, the common balance sheet presentations usually disclose a minimum amount of information, primarily the original cost of the asset and the depreciation allocated to date. When it is considered desirable to make more information available to the reader, it is necessary to include explanatory data in addition to the usual presentation.

### *Price Level Adjustments*

We have stated that the purpose of depreciation is to recover original cost and not to provide a fund for the replacement of assets. There has been and there continues to be misunderstanding on this point but that does not change the nature of depreciation. In a rising price level era, the logical question has

[6] *Accounting Trends and Techniques*, American Institute of Certified Public Accountants, 1957, p. 67.

[7] *The Economics of Accountancy*, John B. Canning, Ronald Press, 1929, p. 27.

[8] Ibid., p. 28.

been raised as to whether original cost is being recovered in terms of real dollars or purchasing power. It is true that the annual depreciation deduction becomes progressively smaller in terms of purchasing power as the price level continues to rise. But is this an isolated development that affects only depreciation? It seems tax reduction proposals are being presented under the guise of sound accounting practices. It is probably desirable that business be allowed to recover the real costs of its fixed assets. However, we do not have to change our concept of depreciation simply because we are striving for tax relief. On the other hand, some insist that this tax relief is being sought because good accounting so dictates, since "depreciation" is being understated.

A hypothetical case may help illustrate some of the questions being raised. The following facts are assumed:

December 31, 19 —. . . . Purchase of fixed assets. . . . . $100,000

Depreciated over five-year life, using the straight-line method. (Residual value ignored to simplify computations.)

A price level of 100 for 19— and increasing 10 points each year.

The depreciation and price level adjustments for the five-year period might be as follows:

| *Year* | *Depr. on Cost* | *Price Level Adjustment* | *Total* |
|---|---|---|---|
| 19— . . . . . | $20,000 | $2,000 | $22,000 |
| 19— . . . . . | 20,000 | 4,000 | 24,000 |
| 19— . . . . . | 20,000 | 6,000 | 26,000 |
| 19— . . . . . | 20,000 | 8,000 | 28,000 |
| 19— . . . . . | 20,000 | 10,000 | 30,000 |
| | $100,000 | $30,000 | $130,000 |

The price level adjustment was computed by multiplying the depreciation charge by the percentage increase in the price level for the particular year over the base year.

There are two distinct elements being considered—depreciation and price level adjustment. In the above case, the annual depreciation charge of $20,000 might be adjusted annually to reflect the change in price level. This would result in deductions over the five-year life of the asset of $100,000 for depreciation plus an additional $30,000 price level adjustment for a total of $130,000 as shown. If the depreciated asset were to be replaced at the end of the fifth year, the cost would be $150,000 if we assume the same item is available in its original form, with the only change in price being due to the changing price level. This is an extremely questionable supposition, although it is often used

in discussing this subject. It ignores the effect that technological progress has on prices in addition to the productive capacity of these assets. In short, it is unlikely that management could or would replace depreciated assets with identical assets. In spite of this, there are those who say the depreciation and price level adjustments totaling $130,000 should really be $150,000, the "replacement" cost of the depreciated asset.[9]

Would the above picture be changed if the funds for the original purchase in 19— were acquired by obtaining a $100,000 loan to be repaid in annual installments of $20,000 or a lump sum payment of $100,000 five years later? Discussions usually confine themselves to the depreciation aspect almost exclusively. The reason is probably because of the adverse aspects of considering the complete picture. The writers and speakers seem to be content with considering only the part of the picture which would result in tax savings. However, if we are to view the problem realistically, we must take into consideration all areas of the problem with which we are concerned.

Depreciable assets may be the items most greatly affected by rising price levels but they are certainly not the only items of significance. There is at least one other major and related item of significance—long term liabilities. In the survey of 600 firms, 447 companies had long-term indebtedness shown on their balance sheets.[10] Long-term indebtedness is usually incurred for expansion purposes rather than to obtain funds for current operations. Over 74 per cent of the firms in the above mentioned survey had some form of long-term indebtedness and yet this phase of price level adjustment is conveniently ignored when discussing price level adjustment of depreciation.

If the $100,000 loan referred to above is repaid in $20,000 installments, there is an element of gain in the form of price level adjustment in that $100,000 was borrowed when the price level was 100 and repaid when the price level was 110, 120, etc., as follows:

| *Year* | *Amt. of Payment* | *Price Level* | *Real Dollars* |
|---|---|---|---|
| 19— ..... | $20,0 | 110 | $18,182 |
| 19— ..... | 20,000 | 120 | 16,667 |
| 19— ..... | 20,000 | 130 | 15,384 |
| 19— ..... | 20,000 | 140 | 14,286 |
| 19— ..... | 20,000 | 150 | 13,333 |
| | $100,000 | | $77,852 |

[9] "Recognizing Deficiency of Depreciation Based On Historical Costs," H. T. McAnly, NAA *Bulletin*, February, 1958, p. 10.

[10] *Accounting Trends and Techniques*, op. cit., p. 88.

In this situation, $100,000 was borrowed and repayment in terms of purchasing power was only $77,852, a gain of $22,148. If the loan was repaid with a lump sum of $100,000 in the year when the price level was at 150, the real cost would be $66,667 resulting in a gain of $33,333. Of course, the amounts referred to as gains would be losses in the same amounts to those loaning the funds.

### *Taxation and Depreciation*

The primary purpose of this paper has been to present the need for the clarification of depreciation adjustments—to separate accounting for depreciation from tax adjustments, price level adjustments, etc. Although it is beyond the scope of the paper to discuss the merits or demerits of various tax adjustment proposals which would apply price level adjustment techniques to depreciation, it might be well to point out the possible tax inequity that would result. Generally, the proposals confine themselves to price level adjustment of depreciation. This is an area of great interest to our industrial concerns. But when there is a change in the price level, it affects the industrial concern with its heavy concentration of depreciable assets and also those firms with lesser amounts of fixed assets. However, the latter may feel the effects of the price level change in areas other than depreciable assets. For example, a finance company which had $100,000 in cash in 19— when the price level was 100 would have also suffered a loss in its "real dollars" if it had $100,000 after five years when the price level was 150. In fact, this loss may be more real than in the case of depreciable assets, since it cannot be offset by technological improvements. The same problem is also experienced by individuals with investments in bonds and life insurance.

Taxation is a serious and complex problem. Unless spending is to be reduced (which seems unlikely at this time), any tax reductions in a given area will have to be met with increases in other areas. Insofar as price level adjustments are concerned, it would seem logical and equitable that the same basic criteria should be used whether the item affected by the price level change is an expensive fixed asset, a long term loan or the cash investment of a finance company.

Our Federal tax laws have changed a great deal since March 1, 1913. More changes will continue to be made but we do not have to change our accounting principles or techniques to bring about any desirable changes in our tax laws. There are numerous situations in which sound accounting principles are in conflict with tax accounting. Unless the law demands a certain procedure be fol-

lowed in order to receive a benefit, generally accepted accounting principles should prevail.

Price level adjustments can be made without discarding historical cost as a basis for depreciation. Even though it is true that depreciation and depreciation reserves are misunderstood by some, any hybrid system would only serve to spread this misunderstanding. Supplementary statements can be provided for management and also included in published statements to present the effect of price level changes on profits, wages, dividends, etc. In so doing we will not have to change the definition of depreciation and a clearer picture of the actual facts will be made available to management and other readers of financial statements.

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## *The Pseudo-Corporation — More Pitfalls*

by CON C. MILLS*

MUCH has been written during past months concerning the opportunity of qualifying corporations to elect not to be taxed as a corporation under the new Subchapter S of the Internal Revenue Code. Mr. Gaither's article in the March *Bulletin* was a clear and concise review of the benefits and pitfalls introduced by the "pseudo-corporation." More needs to be said regarding the disadvantages that can result from an unwise or ill-planned election.

The apparent advantage of switch-

* Member of Tax Staff, Ernst & Ernst, Wichita, Kansas.

ing income through gifts of stock to family members who enjoy lower tax rates could be wiped out by strict application of the reallocating privileges given the Internal Revenue Service by Section 1375 (c). Many have considered the greatest immediate advantage would be gained by stockholders of a qualifying corporation which had unusable net operating losses. The tax benefit to be gained is currently realizable only to the extent such operating loss is deductible from the current year's income of the individual stockholder, since a net operating loss carry-back to years beginning before January 1, 1958 is specifically denied.

Agreements among stockholders of pseudo-corporations are recommended for the protection of minority interests from withheld distribution of income and majority interests from an intentional disqualifying act by a dissenting stockholder. The full effect of such stockholder agreements, however, is in doubt, since certain restrictions upon the transfer of stocks are unenforceable under the laws of some states. An alternate agreement could provide that all stocks must be offered to the corporation or to the remaining stockholders for purchase, before transfer to another party. Here, too, state laws control the extent to which a corporation may purchase its own stock, and hardships could result from a required additional capital investment by the remaining stockholders.

Estate planners must recognize that wills commonly create trust-held stock or a division of stock among too many beneficiaries to meet the requirements of Subchapter S, both of which are disqualifying acts. Also, the absence of specific instructions to an executor to renew the consent to the election to qualify would permit a decision not to consent, should he consider this to be in the best interest of the estate itself.

The absence of final regulations regarding such problems as the meaning of "gross receipts" for purposes of the 20 percent rule, classification of debt securities of a corporation held to be too thinly capitalized, and the unanswered questions regarding the effect on various state corporate and personal income taxes are just some of the problems still facing the tax planner who has the advisory responsibility to his client. Now that the first excitement of this new legislation has diminished it seems wiser, where conditions permit, to defer an election until more rulings and regulations are issued by the Internal Revenue Service and until all stockholders have been made aware of the many pitfalls which accompany the transition from stockholder to "virtual-partner" in the "pseudo-corporation."

# *Keeping the Sales Budget Current With a Small Dose of Statistics*

by PAUL C. TAYLOR

FOR A LONG TIME, we have often heard accounting referred to as "the language which the businessman speaks." Let us listen for just a moment to some very recent additions to this language.

1. Integrated data processing
2. Electronic computers
3. Linear programming
4. Games theory
5. Simplex method
6. Matrices
7. Transportation model
8. Binary system

There are many other equally new "bed-fellows" for the better known parts of the language of accounting. A growing store of literature in the various fields just named is gradually accumulating. Probably most of our N.A.A. chapters have listened to speakers on one or more of these subjects, particularly concerning integrated data processing and the uses of the present day computers. Insistent questioning of these speakers and an investigation of their writings reveals a rather ready tendency to stress matters of procedure. When asked directly how much formal training in mathematics and statistics is needed, particularly with reference to the computers, most seem to shy away and would rather talk about what types of computers are available, how much they cost, how fast they operate, and the rather tedious detailed work of programming the machine itself.

This gives rise to a suggested problem. Are we backing into the use of computers with too much attention to the work of the machine technician? Are we allowing too much glossing over of the very basic, higher mathematics inherent in the various models which have to be built for each business problem before that problem can be programmed for the machine? May I, at this point boast a little? Three years ago at Tulane we began a new day in mathematical training. We now require that all freshmen take one semester of finite mathematics, followed by a semester of introductory calculus. The old order of

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**PAUL C. TAYLOR**, New Orleans Chapter, 1939, has been a Professor of Accounting at Tulane University since 1938. Prior to that he was in cost and manufacturing planning work with the Nineteen Hundred Corporation and with Western Electric Company over a period of twelve years. He holds the Ph.D. degree from the University of Illinois and is a C.P.A. (Illinois). He is a past national Director of N.A.A. and a past President of the New Orleans Chapter.

college algebra and trigonometry, which accomplished little, has gone by the boards. Our students are meeting the tough challenge of learning how to reason by using these instruments of mathematical logic.

### *The Scope of this Paper*

We are all familiar with the fact that changing economic conditions, product obsolescence, public whim, labor strikes, faulty product construction or design, and a multitude of other items are reasons why budgets often get out of line and need revising. It might even be concluded that the one best way to keep a budget current is to just get busy and do such a whale of a good job of managing that costs and revenues are controlled by the budget. This might happen, incidentally, if all budgeted items were really controllable by management. But we know they are not. However, it is none of these considerations on which your attention will be focused here. Rather let us assume that the sales budget has been set. Differences between budget and actual are noted but, in light of the effort and cost involved in the revision of a budget, what can we dig up in the way of a tool to help us decide on just when we revise the budget or to make it more current?

Here is where you are taken back to mathematics or, more accurately stated, back to statistics. Since there is no easy road to an understanding of higher mathematics, we simply have to crawl before we can learn to walk, in this respect. I have no desire, even if I could, to deal with calculus. Rather, in typical college professor fashion, let me take you back to an elementary lesson in sophomore statistics, in the event that you have forgotten or perhaps may never even have had an opportunity to study it in the first place. If your interest can be aroused at this level, there is a good chance that many of you are going to want to continue on to the solution to business problems at higher mathematical levels.

### *A Problem Solved*

Company X is a large manufacturer of a wide variety of products. In one of its divisions, it budgets sales using the previous year's sales, adjusted for any known factors, as a base. These estimates have been reasonably accurate for the average for the year as a whole. However, there has been considerable variation between the actual and budget, month by month. This has led to bad purchasing, bad production scheduling and other costly results. An analysis of the sales

revealed no systematic seasonal variations. It was finally decided that, if an invalid behavior of sales could be discovered when making a comparison with last year's sales and if the behavior persisted for two months consecutively, this would be reason enough to revise the budget.

To demonstrate how this works, consider the following data:

| | *1957 Sales* | *1958 Sales* | | *1957 Sales* | *1958 Sales* |
|---|---|---|---|---|---|
| January | $18.0 | $12.0 | July | $ 8.6 | $ 5.7 |
| February | 3.6 | 11.6 | August | 13.5 | 11.1 |
| March | 7.2 | 12.2 | September | 12.0 | 10.0 |
| April | 7.8 | 11.8 | October | 10.0 | 11.0 |
| May | 12.3 | 3.0 | November | 10.4 | 8.0 |
| June | 11.0 | 3.5 | December | 5.2 | 10.0 |
| | | Totals | | $119.6 | $109.9 |

The inventory on hand at January 1, 1958 is 12.61.
Production is scheduled at 1957 average per month.

The first step is to determine the mean of the sales for 1957. This is $9.97 ($119.6 ÷ 12). The second step is to determine the variance of each month's sales in 1957 from the mean as follows:

| | *Variance from Mean* | *Variance Squared* |
|---|---|---|
| January | +$8.03 | $ 64.48 |
| February | — 6.37 | 40.58 |
| March | — 2.77 | 7.67 |
| April | — 2.17 | 4.71 |
| May | + 2.33 | 5.43 |
| June | + 1.03 | 1.06 |
| July | — 1.37 | 1.88 |
| August | + 3.53 | 12.46 |
| September | + 2.03 | 4.12 |
| October | + .03 | .09 |
| November | + .43 | .18 |
| December | — 4.77 | 22.75 |
| Totals | .00 | $165.41 |

The third step is to square the variances from the mean as shown in the second column above. This eliminates the minus signs shown in the first column. The fourth step is to determine the mean of the summation of the squares

($165.41 ÷ 11 = 16.04). Note that the divisor is 11 and not 12. The fifth step is to extract the square root of the mean of the summation of the squares ($\sqrt{15.04} = 3.87$). Statisticians will, of course, easily recognize the above as one way of arriving at the standard deviation, in this case 3.87.

Now suppose we see to what use this can be put in helping us to decide when to revise the sales budget. Limits within which the budget may vary from the mean can now be established as follows:

| | *1956 Sales Mean* | *Upper Limit* | *Lower Limit* |
|---|---|---|---|
| If one standard deviation is allowed | 9.97 | 13.84 | 6.10 |
| If two standard deviations are allowed | 9.97 | 17.71 | 2.23 |
| If three standard deviations are allowed | 9.97 | 21.58 | .00 |

If management decided to hold to the one standard deviation limit, it has been determined mathematically that only about 68 percent of the time would the actual result (in this case the sales forecast) fall within the limits. Similarly, using two standard deviations, about 95 percent of the time, the actual results fall within the limits while, using three standard deviations, the percentage is over 99. If we assume that management feels that the two standard deviations allowance is strict enough, then we can work up the following figures, remembering to watch for the situation as stated in the problem in which, for two consecutive months, the cumulative sales fall outside the limits, indicating a needed budget revision:

| | *(1)* | *(2)* (Col. 4 − 1) | *(3)* | *(4)* (Col. 2 + 3) | *(5)* | *(6)* | *(7)* |
|---|---|---|---|---|---|---|---|
| | *Actual Sales 1958* | *Beginning Inventory* | *Production* | *Available for Sale* | *Cumulative Sales 1958* | *Budget Limits* *Upper* | *Lower* |
| January | $12.0 | 12.60 | 9.97 | [illegible] | $12.0 | 17.71 | 2.23 |
| February | 11.6 | 10.28 | 9.97 | [illegible] | 23.6 | 27.68* | 12.20* |
| March | 12.2 | 8.93 | 9.97 | 18.92 | 35.8 | 37.65 | 22.17 |
| April | 11.8 | 6.70 | 9.97 | 16.69 | 47.6 | 47.62 | 32.14 |
| May | 3.0 | 4.89 | 9.97 | 14.86 | 50.6 | 57.59 | 42.11 |
| June | 3.5 | 11.86 | 9.97 | 21.83 | 54.1 | 67.56 | 52.08 |
| July | 5.7 | 18.33 | 9.97 | 28.30 | 59.8 | 77.53 | 62.05 |
| August | 11.1 | 22.60 | 9.97 | 32.57 | 70.9 | 87.50 | 72.02 |

*Add the mean to each of the previous months limits.

At this point, cumulative sales have been outside the limits for two months consecutively, indicating a needed revision. One way to accomplish this is to determine new limits by first determining the mean of Column 1 above. This mean is 8.86. Then we can calculate the ratio of the original standard deviation

to the original mean ($3.87 \div 9.97 = 38.8\%$). This percentage applied to the new mean gives the new standard deviation ($38.8\% \times 8.86 = 3.44$). Again, using two standard deviations, we start over as follows (continuing the above table).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| September | 10.0 | 21.47 | 9.97 | 31.44 | 10.0 | 15.74 | 1.98 |
| October | 11.0 | 21.44 | 9.97 | 31.41 | 21.0 | 24.60 | 10.84 |
| November | 8.0 | 20.41 | 9.97 | 30.38 | 29.0 | 33.46 | 19.70 |
| December | 10.0 | 22.38 | 9.97 | 32.36 | 39.0 | 42.32 | 28.56 |

It will be noted that, after the revision, the cumulative sales stay well within the revised limits for the rest of the year.

### *A Tool Which Suggests More Advanced Ones*

Like most other tools used by the accountant, the procedure outlined here and its results should not be the ruling influence in decision-making when other courses are clearly indicated. Varying versions of the main idea are at present in use by some oil companies and in some divisions of our large widely diversified manufacturers. Using the cumulative sales as a base has the advantage of getting away from some sales fluctuations. In some cases, this method has lowered inventories, given lower purchasing costs and better production schedules. Perhaps its greatest disadvantage is not so much a fault of the method as of the budgeting procedure back of it. Budgeting to a certain goal or a certain point of time introduces considerable inflexibility into the procedure. The matter of setting up the budget as a frequency distribution, as worked out by some companies, has much merit. However, that is a story for another time as it involves the building of a linear programming model for each business problem which, in turn, calls for training in calculus and the use of computers.

# Formula to Write Off Financing Expense

by C. A. ANDERSON*

FINANCING expenses of long-term liabilities are generally applicable to several accounting periods. A formula properly developed in the beginning establishes the expense, not only for the current period but for all periods as well. The tax authorities relate financing expenses to the life of the obligation. The formula must be constructed to assure that the write-off the expense coincides with the expiration period of the debt. A simple formula for this purpose, based on dollar-years, is illustrated here.

Assume a loan of $10,000,000, financing expenses of $100,000, and retirement $2,000,000 annually to begin with the sixth year. The borrower has the privilege of making advance reductions, effective with the second year. The necessary general ledger accounts are debentures payable (liability), unamortized financing expense (deferred charge), and amortization of finance expense.

To tie the expense entry to the transaction affecting the loan balance, the formula must establish a value for the unamortized expense at any given date, based on the balance of the loan account at that period. The adjustment of the asset account to its correct balance as of the close of any year automatically determines the expense for that year. The formula is: The expense equals the opening balance of unamortized expense minus its closing balance, which equals:

$$\frac{\text{Unexpired dollar-years}}{\text{Total dollar-years}} \times \text{Total financing expense}$$

Dollar-years are the dollar balance of the loan account, multiplied by the years the balance is expected to remain constant.

Applying the formula as of the close of the first year in the example, we have:

$$\frac{\$60,000,000}{\$70,000,000^{**}} \times \$100,000 = \$85,714.28$$

(closing balance unamortized expense).

$100,000 minus $85,714.28, or $14,285.72, = first year expense.

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* Internal Auditor, Ampex Corporation, Redwood City, California.

** In the illustration we have a closing liability balance of $10,000,000 for five years, or fifty million dollar-years, to which is added 8 million, 6 million, 4 million, and 2 million dollar-years for the close of the sixth, seventh, eighth, and ninth years, respectively, making a total of 70,000,000 dollar-years.

# *Practical Cost Concepts for Small And Medium-Sized Foundries*

by A. C. SINNETT

DUE TO BANKRUPTCY or assignment with loss to creditors, 40 foundries went out of business in the United States during 1955 with liabilities amounting to $2,466,000. In 1956 there were 27 with $2,683,000; in 1957 there were 24 with $1,848,000 and during the first six months of 1958, there were 20 with liabilities of $4,299,000. The source for this information is Dun & Bradstreet, Inc. They state, in their report, "Why Businesses Fail," that three causes are responsible for this high mortality: inexperience in technical operations, short working capital and lack of operational data. It is the last cause that I am going to discuss. Before doing so, let us first review the development of the industry during the last decade or two.

Considering only the foundry division of metal industry, it can be said that production engineering showed little advancement after the turn of the century, except in a few instances, until the last fifteen to twenty years. Even today, there are methods in some foundries which have remained practically unchanged since the beginning of the individual foundry operation. Of course, there is a reason. Only during the first world war and, more emphatically, the second world war, was volume production a necessity and requirement for many foundries. Some of the smaller foundries, being a diversified jobbing part of our economy, did not feel this demand on their facilities at all. Among those which did, the demand for volume production led to a mechanization program which has stopped just short of making plants into "push-button" production units. Plants supplying the automotive, agricultural and railroad industries have found themselves in this category.

## *Irregular Advance of Foundry Methods*

It is apparent that today we have three types or classified methods of foundry production, each suited to a particular production supply requirement. The

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A. C. SINNETT, Wabash Valley Chapter (Houston, 1944), is Treasurer-Comptroller of Terre Haute Malleable & Manufacturing, Inc., Terre Haute, Indiana. He joined the company in 1951. Previously, he held various accounting and treasury positions. Mr. Sinnett was graduated in Accounting and Business Administration from Bryant & Stratton College, Buffalo, N. Y. Mr. Sinnett is a previous contributor to the *Bulletin*.

first can be called conventional. This is the older method, under which very little equipment is used to assist molders and other production workers, except molding machines and such direct finishing equipment as the class of work requires. Molders pour their own molds. Second is the conveyor shop, with perhaps overhead sand supply to the molders and roller conveyor for setting off the molds. This type has continuous molding and a separate pouring crew for that operation. It may also have a sand return conveyor to the sand conditioning equipment and, possibly, core blowers augmented by bench coremakers. The third and now highly developed type is the mechanized shop. Here we have powered conveyors, both for sand and castings in the molding and for castings throughout the plant. It is a high production method and requires for its support long-running orders for high volume production.

Because of this diversity of foundry types and also because accounting procedures has not kept pace with production engineering, we are faced with cost accounting problems in the foundry industry, which must be solved intelligently. We are in danger of finding ourselves in competition which will be disastrous to the extent of heavy losses and, sometimes, bankruptcy unless remedial adjustments are promptly taken. Progress in this regard has been made to the extent that some foundries have made completely new installations of cost accounting procedures. By so doing, they have learned that, although they can intelligently price castings, they also find competing foundries, less well-informed, taking jobs at loss prices and working a hardship on the entire industry.

The solution is not one of having a uniform cost system applicable to all foundries. Such a variety of working conditions and methods exist in the industry that this is impracticable. However, there are generally applicable cost elements and cost factors which, if properly designated and applied, will develop for any individual foundry a cost system which will reflect, to a high degree of accuracy, its production costs by individual pattern. The use of costs of this type by all foundries would result in an honest competitive basis for pricing.

### *Gradations of Foundry Cost Accounting*

Let us review past cost accounting procedures. The oldest and most inadequate method of pricing castings is to divide money spent for production by overall weight produced, to determine a cost price per pound. It is a method still used by some smaller shops and is an obsolete procedure not properly to be

considered. From this method, a procedure developed under which departmental costs were calculated and cost results by departments used for patterns passing through each. This was a marked improvement over the first method and, to a large degree, was adequate under certain production procedures. However, it did not take into consideration size, weight or intricacy of design of castings. This system likewise is being used to considerable extent and can be very dangerous to the foundry using it if there should be a sudden shift of jobs out of or into its production schedule. The next development for foundry cost-finding was the formula method by which some direct charges were made to individual patterns and indirect expenses were allocated by either a percentage of direct costs or else on a rate-per-pound basis. Again accuracy was improved.

However, due to production engineering improvements and mechanization, all of the foregoing procedures have proven inadequate to properly reflect costs of production by individual jobs. Because of this technical advancement and changes in production engineering, it becomes advisable to think of a foundry in other terms than departmentally. No longer should we think of molding, core-making, cleaning, etc., as production phases. It is necessary to go further. For instance, sand preparation and supply costs in molding must be separated into the several methods or units involved. Conveyor molding costs need segregation by equipment units. Conventional molding breaks down into pouring, shifting and dumping, shake-out and spruing. In short, each distinct operation is a production center. The same is true in the core department. We have sand preparation and supply, blower core-making, bench core-making, pasting and painting, baking, delivery, etc. Cleaning by types of equipment used, annealing, and finishing by types of equipment, are all production centers and, therefore, should be cost centers with rates developed for each center.

The cost factors to be worked up for conveying the cost elements to a particular pattern in production will thus properly vary according to the cost center and the production method. To develop a cost formula which will accurately convey cost elements to a pattern, an analysis of plant operations is necessary to determine what cost factors are responsible for particular costs. As an example, it is reasonable to believe the cost of melting should be absorbed in costs by patterns on the basis of metal used per mold. In like manner, the cost of molding sand preparation and supply should be absorbed on the basis of weight of sand used per mold. If more than one method is used for any operation, each method should be calculated separately and charges made to the applicable jobs on the respective bases.

When we go beyond department costs and work up costs applicable to the centers of operation within departments, we have prepared the way for sound costs. This step is most needed in highly-mechanized production shops but is helpful also in the small conventional jobbing shop. For both, it will provide tailored castings costs which include only elements required for production in the case of each pattern and will exclude costs for facilities not used.

The procedure suggestions made are applicable to the entire foundry industry. Certainly, a knowledge of true costs, determined realistically, would be beneficial to all foundries, regardless of the metal used. Competition would be stimulated by confidence in costs and loss price-setting would be minimized. The procedure opens up a field for cost control which few foundries take advantage of. Knowledge of cost of operation of cost centers, developed on a comparative monthly or more frequent basis, will give management and supervision tools to work with. If a chart of accounts is developed to properly record classifications of labor and supplies, the suggestions which have been made are relatively simple to embody in a procedure.

### *Accounting, Management, and Engineering*

Accountants claim the greatest difficulty in attempting to install a cost system in foundries is in selling management and the plant supervision the merits of such a system. The reason for this is not entirely management's conservatism and supervision's suspicions of interference but is largely also the accountant's dogmatic attitude and lack of practical experience in operations. Management has changed its attitude considerably during the last decade and, more often than not, now demands information from which decisions and projections can be developed. In order to give management what it wants, accountants have found it necessary to become less like bookkeepers and more like engineers. Thus, a new profession came into being—industrial or methods engineers.

Some accountants assumed this title too soon and, as a result, confusion developed and the reputation of this new profession was tainted. Also, engineers found themselves drifting into this new field and added to the confusion. The requirements for industrial engineering have been worked out and both former professions find that it is a specialized activity to which they both contribute and which has a separate function in industry, manned by highly-trained professionals.

It is my opinion that cost accounting is the link joining fiscal accounting to industrial engineering. It shows the result in picture form, such as statistics

and charts of operations. It reflects what has happened and sometimes in relation to what should have happened. If properly pursued, it is the guide for what should be done, such as economies to be exacted, equipment to be purchased or abandoned, product pricing, expansion of facilities, etc. The cost accountant, in order to accomplish these objectives, must have the confidence of both management and supervision. Cost accountants must have a "talkable" knowledge of both the product and production methods. This is a must before the first step is taken toward the building of a cost procedure. It is logical that, when a supervisor knows that the cost accountant understands the problems of production in his area and the supervisor has taken part in an analysis of costs and cost centers, he will cooperate to the fullest extent and have confidence in the results. Too much importance cannot be placed on the value of reports or information presented to supervision. They should be kept to a minimum and of operational value only. Good supervision is interested in company progress but that type of information should be presented at supervisory conferences. What they need and want are tools to work with.

### *Information the Supervisor Needs*

Supervision is concerned with two types of cost, variable and non-variable. Variable costs, from the operational viewpoint, are those costs that are controllable in relation to activity of production. Nonvariable costs are those fixed by management or those that do not fluctuate in relation to activity of production. To complicate this analysis of costs, we often find some costs have a portion that are nonvariable below a certain volume of activity and variable above that volume. It is very important to know if this occurs in any of the operations you are responsible for. Because a large per cent of labor is now on an incentive pay basis, we are sometimes lax in controlling hourly workers. I suggest developing a "man chart." This will reflect all the workers required to operate each cost center at varying rates of production. Do not use tonnage as a basis for rate of production except possibly in melting, inspection and shipping centers. This must be carefully analyzed. I believe it will be found that direct labor hours in most cost centers control the need or activity of hourly workers. The "man chart" suggested is not intended for use in place of a flexible budget system if one is being used. It is excellent where none is available and is of great importance in advance of a budget report when a change in production volume is planned. It is a means of control before the budget report shows it is needed.

Flexible budgets are the best guide for labor activities when and where the required information is available. An error sometimes made is lack of policing the budget. Management holds supervision accountable for plus variations. It is up to supervision to hold management responsible for changing the budget when there are production engineering changes or noticeable changes in pattern mix. Keep in mind that budgets are based on averages and, when something happens that distorts the average as compared with actual conditions, a change in the budget is in order. I am sure it is agreed that, unless a budget is realistic, it can be more harmful than good.

Weekly man-hours per ton reports by cost centers are good comparative reports if the average weight per casting and tonnage is also reflected. These reports should also be in graph form and shown both weekly and accumulated to date. Also, the prior-year chart should be shown to reflect comparison. For foundries that do not have flexible budgets, I believe this type of reporting can be of great assistance. Wide variations should be analyzed and, if the reporting is correct, the reason should be noted on the graph.

Scrap reports listing cause of scrap are of great importance to all production supervision. These, also, can be supplemented with charts showing per cent of scrap made by major causes, as well as total scrap. This analysis has been carried out to the extent of having a chart for each molder, showing the percent of total scrap only. Cleaning and first inspection performed by a night shift will advance knowledge of foundry scrap by one day. This can be of great advantage to the molding and core supervision, especially concerning patterns continuing in production on a subsequent day. It makes it possible for supervision to check scrap at the beginning of the day and take corrective steps to prevent recurrence.

Cooperation among supervision can do much toward cost control. When a supervisor knows something is being done outside his area that finally reflects in higher costs and does not do anything about it, he is more guilty, in my opinion, of costly operations than the supervisor of the area where it occurred. In the same respect, inferior workmanship condoned because it will be corrected by a subsequent operation is just as unethical. The slogan "every worker an inspector" can do much to reduce cost. The cost accounting procedure should provide that excess labor required to correct production defects be charged to the cost center where the defect occurred and thus be reflected in performance record of that cost center. In considering labor costs and labor cost savings, it must be kept in mind that such costs pyramid. Fringe benefits or labor related costs add an amazing amount. Accountants should know it. The Economic Research

Department of the Chamber of Commerce of the United States issued a study covering the years 1947 through 1955. This cost in 1947 was 22.5 cents per hour and in 1955 it was 46.1 cents per hous—an increase of 105 per cent. We all know that this has continued through 1958 and I estimate the increase to be around 150 per cent today, or approximately 56 cents per hour.

### *Maintenance; Labor Relations*

Too often, maintenance is considered a cost in the category of nonvariable. I do not consider it as such but list maintenance as a controllable cost. Preventive maintenance has been proven to be cost reducing by lessening the cost of, or preventing, major repairs and the resulting loss of operating time. When repairs to a piece of equipment become so frequent or costly that it should be replaced with new, the request should be made. However, facts are needed to substantiate the requisition; therefore, a repair and maintenance record for each piece of major equipment should be maintained and the information be available. Usually, when the condition develops that it is more economical to buy a new piece of equipment than continuing to maintain the present piece, it will be found that engineering improvements have been made and that increased efficiency will result from a purchase.

Labor relations is not only a responsibility of a department or an individual in your organization. It is a more general responsibility. A better terminology for activity in this regard is "human relations." Disregard of this can be costly. Too much lost time occurs caused by grievances that could have been prevented. When you *know* working conditions are not what they are supposed to be, tell the worker that you are aware of it and will try to have the condition corrected and then do it. If he brings it to your attention, do not be too busy to listen, and then do something about it. Anything which can be done to continue good labor atmosphere in order to prevent slow-downs or grievance lost time is of great importance. Your customers are aware of this and if your company has frequent labor unrest, they know that the cost is in the overhead charges being included in their castings prices.

### *Supervision Today*

The relationship of the supervisor in today's manufacturing organization has changed as has production methods and cost accounting. In the past, his job was to get out production. Today, he is a manager of a production center

or centers, operating a business and that business is to sell castings to the manager of the production center or centers that follow in the process of making saleable castings. As in all business, sales must be at a profit. In order to do this, the supervisor needs operational information as does the general manager. His source is the cost accountant.

# Reports Which Management Can Use for Control

by KENNETH R. RICKEY

REPORTS FOR MANAGEMENT CONTROL can be compared to the circulatory system of the human body. The flow from the farthest point to the heart must be full, complete, and compatible with the entire blood stream that finally reaches the central source.

Many times management reporting systems do not dovetail. Effective reporting is an absolute must for effective management control.

Simplicity is the key to a good reporting system. The terms used in the reports should be familiar to all people using them. These same terms and plans should be used throughout.

It is important that the reports be complete and not issued in "kit" form so the recipient has a do-it-yourself kit without the instructions to put it together. All reports should be made against objectives that are agreed upon and understood by all management personnel.

To illustrate some of the points and a system of reporting that has been effective and yet is simple, let us look at a hypothetical example of some reports and what they can produce.

## Profit Plan

The profit plan in Exhibit 1 is our objective from the standpoint of products, sales, per cent of profit and profit pick-up dollars (sales—variable costs) we expect for the coming year. Let us say for 1958. This is our forecast made at the beginning of the year. This we will use as this year's objective. Of course, there are many other objectives we may wish to obtain but Exhibit 1 indicates how this might be done.

## Comparison to Results

In Exhibit 2, we are comparing our basic finance and operating objectives to the profit plan and to the actual results. This could be a little confusing; how-

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KENNETH R. RICKEY, Penninsula-San Jose (Chicago, 1946), C.P.A., is Vice President and Treasurer of Lenkurt Electric Company, Inc., San Carlos, Calif. He joined this firm in 1953 as Financial Coordinator, and was named to his present position in 1954. Mr. Rickey is a past President of Chicago Chapter and a previous contributor to the *Bulletin*.

RAMA COMPANY

VOLUME - MIX OF PRODUCT - PROFIT PICKUP

PROFIT PLAN FOR YEAR 1958

(All Figures in $000)

| | Sales | Profit | Pickup |
|---|---|---|---|
| PRODUCT A | $ 20,000 | 50 % | $ 10,000 |
| PRODUCT B | 30,000 | 30 | 9,000 |
| PRODUCT C | 20,000 | 38 | 7,600 |
| PRODUCT D | 25,000 | 42 | 10,500 |
| PRODUCT E | 25,000 | 46 | 11,500 |
| | $120,000 | 40.5 | $ 48,600 |

**EXHIBIT 1**

ever, it is easy to understand that long-range basic objectives may not always be in tune with the profit plan for a particular year. Our operations are more like a saw tooth than a straight line on a chart. Therefore, one year's profit plan may be under our long range basic objectives and the next year over these objectives but, over a cycle range of five years, they would meet our objectives.

Our management uses the eight basic factors listed on this schedule to help operate the company. Let us take a look at each of them quickly to see what we have:

1. *Return on net worth* or, as some may call it, return on investment indicates our objective from the equity capital standpoint.
2. *Turnover of net worth* is one of the key factors in getting a return on net worth.
3. *Return on sales* is the profitability of the items that we are selling without respect to how well we are utilizing our capital, for example: turnover of net worth.
4. *Turnover of inventory* is an extremely key figure in our business, that requires inventories to be held in stock. Undoubtedly, the turnover of inventory has a major effect upon our turnover of net worth.
5. *Liquid position* is the cash and accounts receivable, less total liabilities. Could we pay all of our debts with those items we have available immediately?
6. *Quick ratio* is the liquid position in ratio form.

7. *The current ratio* is the total current assets compared to total current liabilities.
8. *Ratio of debt to net worth* is the relationship of our equity capital to that which is borrowed, an important key factor.

All functions of management must understand these eight key operating objectives and all of the factors behind them, to know what we are trying to accomplish. In addition, all elements of management must understand what their respective parts are—just as the corpuscles, the artery, the vein understand in our circulatory system what function they must play to keep it strong and healthy.

RAMA COMPANY

BASIC FINANCE AND OPERATING OBJECTIVES

COMPARED TO PROFIT PLAN AND COMPARED TO ACTUAL RESULTS

| | Long Range Basic Objectives | Profit Plan For 1958 | Actual Results 1958 |
|---|---|---|---|
| 1. Return on Net Worth | 20% | 18% | 6.8% |
| 2. Turnover of Net Worth | 3.4 Times | 3 Times | 2.84 Times |
| 3. Return on Sales | 6% | 6% | 2.4% |
| 4. Turnover of Inventory | 5 Times | 5 Times | 4.4 Times |
| 5. Liquid Position | $2,000 | $2,000 | $ (1,300) |
| 6. Quick Ratio | $1.20 to $1.00 | $1.16 to $1.00 | $ .90 to $1.00 |
| 7. Current Ratio | $3.00 to $1.00 | $3.16 to $1.00 | $ 2.72 to $1.00 |
| 8. Ratio of Debt to Net Worth | 50% (Maximum) | 30% | 35% |

**EXHIBIT 2**

### *Operations Statement*

Exhibit 3 constitutes a common results-of-operations statement, actual results compared to the profit plan. We can see that the return on sales is only 2.4 per cent compared to the 6 per cent in the profit plan—the reason: lower volume and costs in excess of what we had expected to have at a higher volume, that is, the standby costs. One point should be mentioned here. No discussion is included in this article regarding the use of variable and fixed costs; it is assumed they must be used to obtain good control. Looking at these results we ask—why didn't we do better?—and, therefore, want to know more about our operations.

### *Variance Rundown*

The first step from the results-of-operations statement is an analysis of the

**RAMA COMPANY**

**RESULTS OF OPERATIONS FOR THE YEAR 1958**

**(All Figures in $000)**

| | Per Profit Plan | Actual Results | Variance Gain (Loss) |
|---|---|---|---|
| Sales | $ 120,000 | $ 100,000 | $ (20,000) |
| Less Variable Costs | 71,400 | 62,200 | 9,200 |
| Profit Pickup on Sales | $ 48,600 | $ 37,800 | $ (10,800) |
| Less Standby Costs | $ 33,600 | $ 32,800 | $ 800 |
| Gross Earnings | $ 15,000 | $ 5,000 | $ (10,000) |
| Taxes | 7,800 | 2,600 | 5,200 |
| Net Earnings | $ 7,200 | $ 2,400 | $ (4,800) |
| Return on Sales | 6% | 2.4% | |

**EXHIBIT 3**

variances. This begins with Exhibit 4. We find that in our gross earnings (earnings before taxes) we had a $10,000,000 variance; further, we find the major reasons for these variances. They are:

1. Volume variance,
2. Mix of product variance, and
3. Performance variance.

This breakdown makes us ask what caused our volume variance and then we move to the next schedule.

RAMA COMPANY

SUMMARY OF TOTAL VARIANCES FROM PROFIT PLAN FOR THE YEAR 1958

(All Figures In $000)

| | | Reasons | |
|---|---|---|---|
| Planned Gross Earnings | $ 15,000 | 1. Volume | $ (8,100) |
| Actual Gross Earnings | 5,000 | 2. Mix of Product | (2,700) |
| Total Variances | $ (10,000) | 3. Performance | 800 |
| | | | $ (10,000) |

**EXHIBIT 4**

We now look at a breakdown of sales by products (Exhibit 5) to see where the volume variance occurred. We can see that in Product A we lost $10,000,-000 of volume, in B we picked up $10,000,000, C was on the "button." In Products D and E, our volume was down, resulting in a volume loss of $20,-

RAMA COMPANY

VOLUME VARIANCE FOR YEAR 1958

(All Figures in $000)

| | Profit Plan Sales | Actual Sales | Variance Gain (Loss) |
|---|---|---|---|
| Product A | $ 20,000 | $ 10,000 | $(10,000) |
| Product B | 30,000 | 40,000 | 10,000 |
| Product C | 20,000 | 20,000 | — |
| Product D | 25,000 | 15,000 | (10,000) |
| Product E | 25,000 | 15,000 | (10,000) |
| Totals | $120,000 | $100,000 | $(20,000) |

Profit Plan Profit Pickup - 40.5%

Loss of Profit dollars because of drop in Volume $(8,100)

**EXHIBIT 5**

000,000. Our profit plan sales, shown on Exhibit 1 were $120,000,000. Our actual sales were $100,000,00. This is our comparison against our objective. How did this affect our profit dollars? Our profit plan said we get a 40.5 per cent profit pick up per cent; therefore, we lost $8,100,000 in profit because of the $20,000,000 loss in volume (40.5 per cent of $20,000,000).

RAMA COMPANY

MIX OF PRODUCT VARIANCE FOR YEAR 1958

(All Figures in $000)

| | Actual Sales and Profit Pickup | | |
|---|---|---|---|
| | | Profit Pickup | |
| | Sales | % | Dollars |
| Product A | $ 10,000 | 50 | $ 5,000 |
| Product B | 40,000 | 30 | 12,000 |
| Product C | 20,000 | 38 | 7,600 |
| Product D | 15,000 | 42 | 6,300 |
| Product E | 15,000 | 46 | 6,900 |
| Total | $ 100,000 | 37.8 | $ 37,800 |
| Planned Profit Pickup | 100,000 | 40.5 | 40,500 |
| Loss of Profit Dollars because of an Unfavorable Mix | $ 100,000 | (2.7) | $ ( 2,700) |

**EXHIBIT 6**

The next major variance we want to look at is our mix of product variance (Exhibit 6). What happened here and why? In looking at our sales figures by products and using the actual profit pickup percentage, the profit pickup dollars were $37,800,000 on $100,000,000 worth of sales volume. Our actual profit pickup was 37.8 per cent but, referring to Exhibit 1, our planned profit pickup was 40.5 per cent. Therefore, on $100,000,000 worth of sales (actual sales), we had a 2.7 per cent unfavorable variation on our profit pickup due to mix of product. Even with a lower sales volume, we were unable to maintain our objective in profit pickup; therefore, our gross earnings were reduced $2,700,000.

RAMA COMPANY

STANDBY BUDGET PERFORMANCE BY RESPONSIBILITY–FOR YEAR 1958

(All Figures in $000)

| | Per Profit Plan | Actual Results | Variation Gain (Loss) |
|---|---|---|---|
| Manufacturing | $ 7,200 | $ 6,500 | $ 700 |
| Engineering | 6,000 | 6,100 | ( 100) |
| Marketing | 12,000 | 12,500 | ( 500) |
| Finance & Accounting | 3,600 | 3,200 | 400 |
| Administration | 4,800 | 4,500 | 300 |
| Totals | $ 33,600 | $32,800 | $ 800 |

**EXHIBIT 7**

Next we come to the performance variance. We are looking here at the standby budget performance by responsibility (Exhibit 7). So far, we have looked at the change in profit because of the variation in volume in the plan. This is our sales dollars. Then we moved into the variation due to profit pickup. These are the variable costs of our results-of-operations statement. (We now begin to see how the statements tie together like our circulatory system.) Now we look at the standby expenses—the budget performance. They are broken down by five major areas. They show the budget, approved for the profit plan, the actual amount spent and the variation. ($800,000 favorable). This gives a quick review of our operations in summary form.

More detail may be required on the three major variances that were covered. For example:

1. In the case of volume variance, further analysis could be made by marketing areas to determine why certain products lost volume and others gained volume—which would once again tie into this volume variance statement.

2. In the case of mix of product, this could be tied back to our costs and our pricing formula to see how we arrived at the profit pickup. Or we may wish to tie certain cost reduction into this; but, whichever way we go, we would again tie into this mix-of-product statement.
3. In the case of our performance variance, further analysis of individual budgets by cost centers would be made or broken down to the department level. This again ties into this particular performance variance statement.

So, in all cases, we show any manager in the organization how his decisions affect his part in the total profit plan.

### *Financial Position; Return on Net Worth*

The financial position statement (Exhibit 8) once again depicts how the profit plan can be compared to actual, showing the variation. It is imperative that we compare our financial position against a profit plan to see where we are and what we have to use in the future. The report is important to long range planning because of credit position, working capital, inventory position, and capital equipment acquisitions.

RAMA COMPANY

FINANCIAL POSITION DECEMBER 31, 1958

(All Figures in $000)

| | Profit Plan Forecast | Actual | Variation |
|---|---|---|---|
| Liquid Position Assets | | | |
| Cash | $ 4,000 | $ 2,000 | $( 2,000) |
| Accounts Receivable | 10,000 | 9,000 | ( 1,000) |
| | $ 14,000 | $ 11,000 | $( 3,000) |
| Less Liquid Position Liabilities | | | |
| Notes Payable | $ 4,000 | $ 6,900 | $( 3,900) |
| Accounts Payable | 5,000 | 4,000 | 1,000 |
| Taxes | 4,000 | 1,400 | 2,600 |
| | $ 12,000 | $ 12,300 | $ ( 300) |
| Liquid Position | $ 2,000 | $ ( 1,300) | $( 3,300) |
| Inventories | 24,000 | 22,500 | ( 1,500) |
| Net Working Capital | $ 26,000 | $ 21,200 | $( 4,800) |
| Land, Buildings and Equipment | 14,000 | 14,000 | - |
| Net Assets | $ 40,000 | $ 35,200 | $( 4,800) |
| Represented by - Net Worth | | | |
| Capital Stock | $ 10,000 | $ 10,000 | $ - |
| Retained Earnings | 30,000 | 25,200 | ( 4,800) |
| Total | $ 40,000 | $ 35,200 | $( 4,800) |

**EXHIBIT 8**

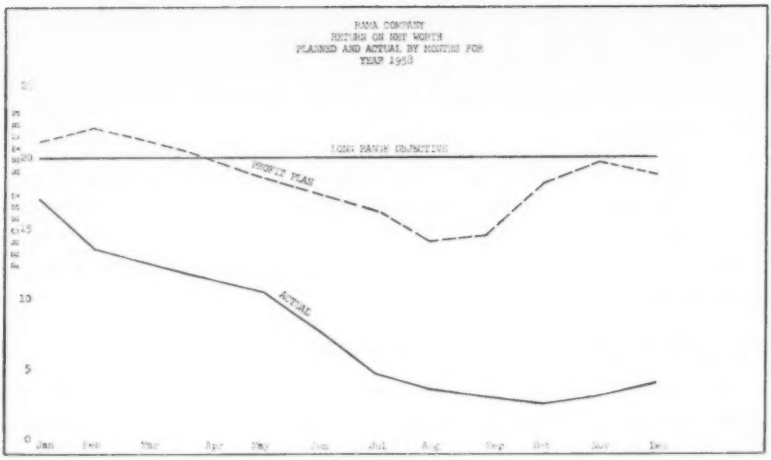


**EXHIBIT 9**

The chart portrayed in Exhibit 9, showing return on net worth, is an example of how this information can be presented graphically. Here we show the 1958 profit plan by the dotted line. The solid line is the actual results. We can immediately see the variation. The straight line on the chart is the long-range objective. This is what we expect over a cycle period of five years. All of the information presented in these statements can be charted for ease in presentation to management.

I believe an informal narrative report is necessary for good management control. Some people can read figures and get the information out of them. Some can read charts and get the information they need. Some can read a narrative report and get what they need. And some people use a combination of the three. The fourth method of communication is actual face-to-face verbal communication to the managers. If all four are accomplished, we will undoubtedly secure the desired result. And no one needs a "do-it-yourself kit."

### *The Narrative Report*

We have gone through a hypothetical example presenting the statements and how they could be charted. I would also like to follow with a narrative report on these particular statements showing its importance. There is a repeat of information that already has been in this article but it demonstrates that the "meat" is generally contained in the narrative report. The people responsible for mak-

ing up the figures will give more detail if it is needed. *This is something we must cultivate.* This narrative report follows:

Rama Company

COMMENT ON FINANCES AND OPERATIONS

For the Year 1958

We were not able to meet our profit plan for 1958. Lower volume and less profitable sales mix were the key reasons.

I. RETURN ON NET WORTH

Profit plan 18%
Actual 6.8%

Our turnover was down slightly. However, our return on sales was less than half of our forecast. We must correct this situation in 1959, as the financing of our company for future growth is dependent on good earnings.

II. TURNOVER OF NET WORTH

Profit plan 3 Times
Actual 2.84 Times

The reduced sales volume caused this to be down as we continued to retain our net worth from the beginning of the year, plus profits for this year, in order to have sufficient equity capital available for the future growth we anticipate.

III. RETURN ON SALES

Profit plan 6%
Actual 2.4%

Gross earnings were $5,000 compared to $15,000 in the profit plan—a drop of two-thirds. The major variances were due to:

| | | |
|---|---|---|
| Volume | down | $(8,100) |
| Mix of product | down | (2,700) |
| Performance | up | 800 |
| Total | down | $(10,000) |

IV. VOLUME VARIANCE (Reduced Gross Earnings $8,100)

We encountered difficulty with products A, D and E this year. Product A apparently is overpriced as there were definite marketing areas in which we could have sold it at a 10 per cent price reduction. We were reluctant to do this, since it is our highest margin item and has a high quality standard.

On Product D a new competitor entered the market and made a determined effort to get this business away from us. We lost some business because of this but feel our quality and service will help to win the business back in 1959.

Product E was new this year and we encountered production troubles in the early part of the year that delayed deliveries. These were finally corrected in

the third quarter and we are producing on schedule with a nice backlog going into next year.

Undoubtedly the downturn had some affect on our volume; just how much we are not sure but, with harder selling, we expect to make it up and then some in 1959.

V. Mix of product (Reduced Gross Earnings $2,700)

We are quite disturbed about this as we felt our profit plan was conservatively forecasted with a mix producing a 40.5 per cent profit pickup. Because of the dip many of our customers became price conscious and the sales of our high-margin items dropped off and low-margin items went up. Perhaps our marketing people realized this too late and were focusing too sharply on sales dollars, rather than profit pickup and sales dollars.

Product E just introduced is a good one with a good margin and its delay in production could have made the difference in the mix. Our future planning is geared to maintain a 40 per cent plus profit pickup.

VI. Performance (Increased Gross Earnings $800)

We reviewed our expense budgets three times during the year to see if we could help our profit picture. We did make some reductions in manufacturing, finance, accounting and administration.

In engineering we had two new products close to the production stage and felt we should speed these up in order to increase our volume, so we increased costs $100 here.

We analyzed our marketing operation during the year and found some basic faults in our organization and approaches. We reorganized it and "beefed" it up to where we think our sales effort will be about 50 per cent better. This increased our expenses in this area, but the result is that our order backlog is already increasing.

VII. Turnover of inventory

Objective 5 Times
Actual 4.4 Times

We had anticipated higher volume at the beginning of the year and had the inventory to support it but it did not come. We started cutbacks at the end of the first quarter—then came along Product E and the delays which meant inventory that was not being shipped. We feel our inventory is healthy at the end of the year and will be turned 5 times during 1959.

VIII. Liquid position ($1,300 in the red)

This is most disappointing to us as this leaves our financial condition weakened at a time when we hope to expand our volume. Low profits and a new product in the inventory were the cause. By holding our inventory *status quo* and using our earnings in 1959 for the reduction of notes payable, we can recover quickly. This is a must for us to do.

IX. QUICK RATIO ($.90 to $1.00)

This reflects the dollars of cash and accounts receivable we have to pay all our liabilities and, in this case, it is only 90 cents to pay each $1.00.

We had to borrow because our profits were not as high as we planned. As stated under Liquid Position, we must get this up to a more liquid basis in 1959.

X. CURRENT RATIO ($2.72 to $1.00)

At our objective of $3.00 of cash, accounts receivables and inventories for each $1.00 of liabilities, we feel we have the margin required for growth. Anything less than this means we are not in a strong position for growth. If we do what we plan in 1959, we will reach our objective and be in a good position for 1960.

XI. RATIO OF DEBT TO NET WORTH (35%)

Our ratio of equity capital to total liabilities, or borrowed capital, is important if we are to keep our credit position good and maintain control of the business free from forced outside advice. We are in good shape with a strong equity position and were able to absorb a poor 1958 in this area without any ill effect.

XII. ORDERS AND BACKLOG

| | |
|---|---|
| We began the year with a three-months backlog of | $40,000 |
| During the year we entered orders for | 110,000 |
| with a substantial increase in the last quarter and we shipped, | 100,000 |
| so we enter next year with an increased backlog of $10,000 or | 50,000 |

In conclusion, reports for management control:

1. Should be simple and easy to understand.
2. Should be reported against objectives that are known and understood by all.
3. Should be a part of the complete picture.
4. Should be presented in more than one fashion—that is, by statements, by charts, by narration, and finally, by direct communication.

These are effective means of getting the information to management, so that it can take action to control the course of our business in accordance with those established long-range objectives.

# Basics of Effective Reporting

by ROBERT W. HEYER*

ACCOUNTING STAFFS are experiencing current pressure from top management for more timely and more detailed reports for use in facilitating decision-making at the top level. In addition to reports of historical data, management is demanding from the accountants special reports and control reports involving extensive use of forecasts of operations, in order to measure product and departmental performance.

It is my belief that these circumstances provide an outstanding opportunity for accountants to improve their worth to their organizations. However, in taking up the gauntlet, we must keep foremost in our minds some important considerations, the fulfillment of which is essential to success. These considerations are:

1. *Sound accounting practice*—All reports must be supported by accurate detail compiled through the application of sound accounting principles.
2. *Timeliness*—Reports must be available to management as soon as possible, since their value as tools in the decision-making process diminishes rapidly with the passage of time. Rapid reporting can be achieved only by enthusiastic personnel, organized to do the job and assisted by effective use of electronic equipment.
3. *Appraisal of reports*—Reviews should be made regularly of the reports reaching executives. Care must be exercised, however, that accounting staff men do not screen out significant relationships which the senior executive might have detected because of his greater experience and interpretive abilities.
4. *Training*—Not only must the accountant be thoroughly versed in his field; he should also have a broad business administration background if he is to intelligently provide management with the necessary data. He must be familiar with statistical methods, forecasting techniques, and be able to write perceptive comments which should accompany many of his reports.

* Supervisor of General Ledger Accounting, Apparatus and Optical Division, Eastman Kodak Co., Rochester, N. Y.

# *Tire Cost Control in a Truck Transit Company Operation*

by WILLIAM J. TAVENOR

HOW TO KEEP an up-to-date, complete file on tires both on and off the road? That was our problem at Mayflower. Now, with our current system of tire control, we know how many tires we have, where they are located and, last but not least, what make and type of tire gives the best service and cheapest cost per tire-mile. In an industry where the profit margin is small, cost controls are essential.

We operate trucks throughout the country. However, we have only one home port. This creates a problem, as many of our tire changes and purchases are made on the road by our drivers. This fact makes it more important that we keep careful watch over our tires.

INDIVIDUAL TIRE RECORD CARD

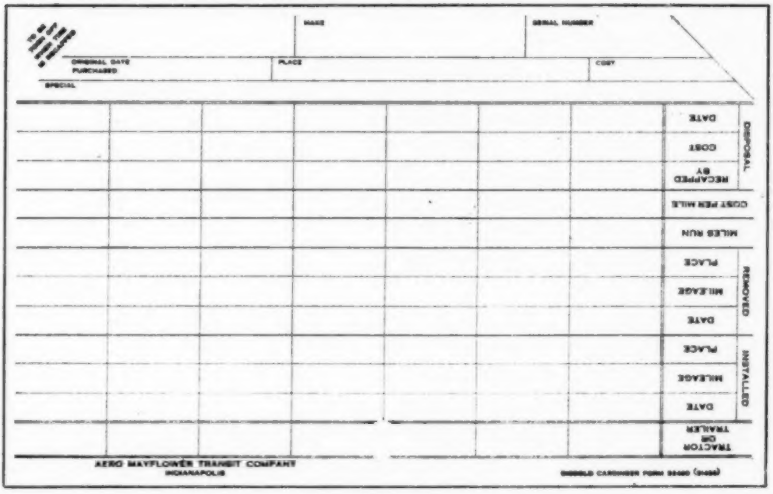


**EXHIBIT 1**

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**WILLIAM J. TAVENOR**, Indianapolis Chapter, 1956, is Auditor, Aero Mayflower Transit Company, Inc., Indianapolis. Mr. Tavenor has been employed since December, 1945. He served 5 years in the Army. Mr. Tavenor attended Indiana University.

### *Tire Record Cards and Tire Report*

The tire records are maintained by the use of four different cards kept in two Cardineer files in our accounting department.

The individual tire record card (Exhibit 1) is completed as soon as a tire is acquired, either by purchase for stock or replacement on the road. This card indicates make, serial number, date and place of purchase and cost. The tire record card for all tire purchases for stock is filed in a stock file and remains there until a shop tire report (Exhibit 2) indicates it has been placed on a vehicle. We are able to maintain a tire inventory which balances to our ledger control. An adding machine tape on the cards in our stock file will give us our inventory figure. Upon installation on a vehicle, the card is pulled. The number of the unit, the date, the speedometer reading and city and State where

**AERO MAYFLOWER TRANSIT COMPANY, INC.**

| | |
|---|---|
| Speedometer Reading | |
| Tractor Number | |
| Trailer Number | |
| Size of Tires | |
| Date | |

SHOP TIRE REPORT

*(Fill in all items above)*

| | | TIRE REMOVED | | TIRE INSTALLED | |
|---|---|---|---|---|---|
| | Position | Reason for Change | Make and Serial Number | Make and Serial Number | Specify as New Used |
| TRACTOR | Left Front | | | | |
| | Left Outside Rear | | | | |
| | Left Inside Rear | | | | |
| | Right Front | | | | |
| | Right Inside Rear | | | | |
| | Right Outside Rear | | | | |
| TRAILER | Trailer Left Outside | | | | |

**EXHIBIT 2**

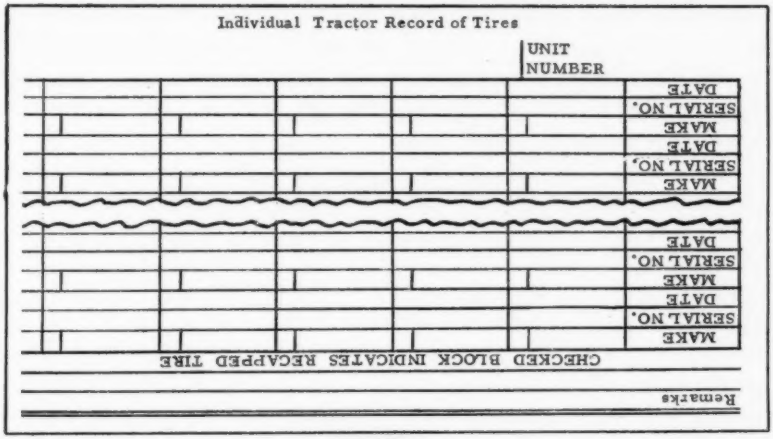


**EXHIBIT 3**

installation is made are posted to the card. The tire report gives all the necessary information. The tire record card is then filed in what we call an active file by brand and serial number, and it will remain in this file until the tire is removed from a unit.

At this same time, a record is set up on an individual tractor record (Exhibit 3) or a similar individual trailer record. These cards will indicate the tires being carried by each of our tractors and trailers. Spare tires are posted in red.

To this point, we have covered the purchase of a tire, placing it in stock and then removing from stock and putting it on the ground, so to speak. Next, we have purchases made on the road by our drivers with a credit card. Such purchases are made through necessity due to the need of an immediate replacement of a worn out tire on a unit. The tire department is informed of purchases of this type through a tire report submitted by the driver. At this time, Exhibit 1 is completed from the tire report, which means that a new tire is now on the road working for Mayflower. The applicable tire record card is posted to reflect the new tire now on the unit and also the removal of the old tire. The tire report is temporarily laid aside until receipt of the invoice from the seller. We now have a new tire card filed by make and serial number, and we have changed the unit card to reflect the purchases of the new tire and the removal of the old.

### *Tire Removal; Recapping*

Now, what do we do with the tire card for the old tire? A list of tires

removed by drivers on the road is submitted to our shop, placing it on notice of the expected arrival of a few worn out carcasses. At the same time this list is compiled, a salmon-colored flasher card is placed in front of the individual tire record card which is now in our pending file. (We removed this from our active file when our tire report came in from our driver showing that he replaced the tire.) Should this tire not arrive in Indianapolis in a reasonable length of time, the driver is contacted with a curt, "Where is the tire?" No driver is permitted to have a tire recapped, junked or undergo a major repair. All tires are sent to Indianapolis.

The tire report has now informed the tire department of the installation of new tires by shop and driver and also of the removal of tires. It will also tell of the switching tires from tractor to trailer, and the switch from spare to the ground and vice versa. In other words, it gives us the necessary information to change our tire cards from active to pending, and vice versa, and record the necessary mileage so vital to our statistics. The tire report is a vital tool to our procedure and must be completed whenever a tire change is made.

The shop furnishes a tire inspection and disposal record of all tires to be recapped. From this information, the tire cards are pulled from the pending file, the mileage is figured and a tire cost per mile is computed. The original tire has now lost its identity and the recapped tire is classified by brand of the company making the recap. A recapped tire becomes a part of our stock file until it is back on the road. To denote a recapped tire in our records, we tear off a perforated corner of the related individual tire record card.

A tire inspection and disposal record is furnished on all tires that are junked and the same statistics are compiled as on the tire to be recapped. A monthly report is prepared for top management showing by make the number of tires disposed of by junking or recapping, cost per tire-mile and average number of miles per tire. The accounting department, with the able and efficient assistance of the operations and maintenance departments, has come up with a tool for management that is practical, efficient, and easy to diagnose.

# *Shall We Own or Lease Our Automobiles and Trucks?*

by CHARLES J. SMITH

TODAY leasing programs, particularly in the field of automobiles, trucks, trailers, lift trucks and other items of mobile equipment, are being evaluated by many large and small companies. These are so-called short-lived assets and are service assets as distinguished from production type assets. In understanding a financial evaluation of leasing, it should be clearly resolved from the very beginning that, only after you have weighed all the considerations and studied all the aspects involved, can you decide whether leasing or ownership is better for you.

In the illustrations and figures which are given in this article there is some oversimplification only because you should recognize and convey to those who will participate in the evaluation that, once the fundamentals of finance are understood, the principles and concepts of leasing are simple. Accountants are inclined to assume that all the principles and fundamentals of finance are clearly understood by management. If you can convey the basic principles of leasing, the details are mere elaborations.

## *When Do You Consider Leasing — and What Does It Do?*

Before leasing concepts are considered, it must be decided whether a company is even remotely interested in the subject of leasing. Suppose your president should hear that several of your competitors are leasing their delivery trucks and materials handling equipment and moreover are now furnishing leased automobiles to their salesmen. He asks whether your company should also be interested in leasing. You would probably say "maybe" under such circumstances as these:

1. You are planning an expansion program
2. You need an equipment modernization program

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**CHARLES J. SMITH**, Baltimore Chapter, 1957, C.P.A., is Vice-President and Controller of Peterson, Howell and Heather, Inc., Baltimore, Maryland. He is an instructor at Johns Hopkins. Previously he was Chief Accountant at Black and Decker Mfg. Co. and later Controller of Research and Development at Olin Mathieson Chemical Corp.

3. Your current ratio is not satisfactory
4. Your bank has imposed restrictions on working capital
5. Inventories should be greater
6. You need research
7. You should market a new product
8. A new sales territory or outlet should be established
9. You pay a flat mileage allowance which is extremely lucrative for the high mileage driver and inadequate for the low mileage driver.

After the need for greater funds is established, you then decide whether to (1) borrow from the bank, (2) borrow under a long-term debt agreement, (3) issue more equity capital, or (4) lease. If you can lease your short-lived assets at a reasonable cost, you would probably rule out any long-term commitment, such as you would have if you issued bonds or debentures or made a loan from a life insurance company. You would, of course, be reluctant to consider an equity issue because it would dilute earnings. Unless your working capital position is extremely liquid, you would probably find that bank borrowing to finance fixed assets might impair flexibility. You know, too, that an unused credit line is like money in the bank.

Leasing provides cash as, for example, when you sell and lease-back, or leasing saves cash when you acquire new items. Under the leasing program, no one other than those concerned with the legal title is aware that the unit is not owned. Thus, the loss of so-called pride of ownership, whatever that might be worth, is minimized. The underlying concept of leasing which proves so attractive to many is that, instead of paying one lump sum for the so-called bundle of future services which extend over several years, you make payment only as these services are provided and used. Many executives reason in this way: "Since operational flexibility is not impaired in any way, why should we use our funds or our credit line." Later, cost considerations, which are always important, are given and evaluated. Some simple illustrations of figures are shown in Exhibit 1.

1. The initial impact of the sale and lease-back is obvious. In the example used, $2,000,000 of fixed assets are converted into $2,000,000 of cash (current assets). Because depreciation is a non-cash expense and rental a cash expense, the cash flow in the long run must be considered. This is why the cumulative two-year effect in the next illustration is more typical and more useful in an evalution.
2. The next series of figures shows what would probably happen if a company used its working capital to finance the acquisition of

FINANCIAL EFFECT OF LEASING VS OWNERSHIP

(Figures in $000)

| | Without Leasing | With Leasing |
|---|---|---|
| Sales and Lease-Back (initial impact) | | |
| Current assets | $15,000 | $17,000 |
| Fixed assets | 8,000 | 6,000 |
| Total | 23,000 | 23,000 |
| Current Liabilities | 5,000 | 5,000 |
| Long Term Debt | 3,000 | 3,000 |
| Capital & Retained Earnings | 15,000 | 15,000 |
| Total | $23,000 | $23,000 |
| Acquisition of Additional Mobile Equipment By Using Working Capital (original cost $2,000,000. Cumulative two-year effect is shown to reflect cash flow) | | |
| Current assets | $14,000 | $15,000 |
| Fixed assets | 9,500 | 8,000 |
| Total | 23,500 | 23,000 |
| Current Liabilities | 5,500 | 5,000 |
| Long Term Debt | 3,000 | 3,000 |
| Capital & Retained Earnings | 15,000 | 15,000 |
| Total | $23,500 | $23,000 |
| Current Ratio | 2.5 | 3.0 |
| Fixed Assets to Tangible Net Worth | 63.3% | 53.3% |
| Funded Debt to Net Working Capital | 35.3% | 30.0% |

**EXHIBIT 1**

$2,000,000 of automobiles. Here we see the long-run effect (usually two years). Over a full two-year period cash would likely be reduced by $1,000,000 and current liabilities would be increased by $500,000 (average investment is $1,500,000 for cars costing $2,000,000 originally). We see that, under leasing, the current ratio (current assets to current liabilities) is considerably better, 3.0 vs. 2.5, and that the stockholders' investment in fixed assets is down from 63.3 per cent to 53.3 per cent. This 10 per cent difference is, in effect, leverage which can be used to increase earnings without dilution.

## *Leasing Plans and Costs*

While there are many different kinds of leasing plans, the presentation here is limited to the net or finance lease. There are many other types and, again, you alone should decide which is best for you. If, for example, you need a car or truck one day a week, a flat "daily rated" leasing plan would probably

be best for you. Many companies rent their data processing equipment from I.B.M., Sperry Rand, Minneapolis Honeywell, R.C.A. and other companies. This is the typical flat "monthly rated" plan, with maintenance and insurance included. Automobiles may be rented on a daily basis for a fixed daily rate, with an additional charge for gasoline, oil, tires, etc. It is imperative, therefore, to know precisely what terms and conditions are stated in the lease agreement. When you rent an apartment, the rental may include heat and hot water. When you rent a house, you may provide not only your own heat, utilities and hot water, but you may pay for the water itself. These differences in what is provided are just as important in commercial leasing as they are in the examples cited.

To evaluate costs, you must firstly ascertain what is being furnished. Every now and then automobile dealers advertise amazing bargains. For example, a brand new car was advertised for the low, low price of $950. It developed that no engine was included. It would be helpful to analyze the price structure of one major leasing program for automobiles. (This one is not necessarily typical):

1. It is a net lease. All insurance, maintenance, tags (other than the initial registration) are provided and paid for by the lessee (the user). The car is fully serviced, registered and ready to be driven at the time it is delivered to the lessee's representative (wherever he may be).

2. Any make or model may be leased. The rent is based on the cost of the car after deducting discounts. Depreciation is estimated to be 2 per cent a month and, in addition, as part of the total rent there is an element for the services to be furnished by the lessor. These services vary considerably and, for this reason, it is important that you closely analyze what you will receive for the rent paid.

3. A sale is made at the time the car is to be replaced (and again the period of use will vary based on mileage), and the actual depreciation, i.e., cost less selling price, is ascertained. If the actual depreciation is less than the estimated monthly 2 per cent figure, a refund of rent is made. If actual depreciation is more than 2 per cent a month, additional rent is paid. Obviously, you should closely evaluate the method used by the lessor to sell used cars because, unless the price is adequate, your rental will be increased. Under the plan being described, no part of the resale proceeds is paid to the lessor.

4. An example of how the rental adjustment is made at the time of sale follows: If a car costs $2,500 and it is in service for two years,

the depreciation formula would provide a base value of $1,300. (To arrive at this you multiply 2 per cent times $2,500, which is $50. Then you multiply the $50 by the period of the lease, namely 24 months, and arrive at $1,200. The base then is $2,500 less $1,200, or $1,300.) If the selling price for the car is $1,500, there is a refund of rental of $200. If the selling price is $1,200 there is an additional billing of rental of $100. It is apparent, therefore, that the lessee is charged in the long run with actual depreciation.

5. Other leasing plans include those which charge, in addition to rent, a separate procurement fee at the time of purchase and an additional fee at the time of sale. Some also share in the selling price at the time of sale.
6. Do not fail to give the lessor proper cost recognition for the accounting, legal, billing and related services which are included in the rate. Also, do not overlook the interest savings you realize because the rental does not begin until the unit leased is delivered. Under normal borrowing practices, the interest on a loan accrues long before all the funds are actually disbursed.

The reader probably is familiar with the approach taken by Joel Dean and by the Machinery and Allied Products Institute in measuring the rate of return on proposed fixed asset acquisitions. Basically, the objective is to arrive at a discounted present value rate of return and then to compare this rate with the actual rate the company is currently earning. This principle may be used to explain a concept of leasing. If a company invests $1.00 annually for four consecutive years at 6 per cent, the present value of the total of $4.00 is $3.46, or a net difference of $0.54. Under the leasing program described above, the payment of $1.00 annually for four years will provide a present value of $4.00, for which the lessee will pay a total after tax, interest and service cost of approximately $0.20, or about 50 per cent less than the discounted value of a 6 per cent investment. The advantage is obviously in the tax deductible status of the rental payments.

### *Comparison With Other Financing Methods*

By tradition, a bank will normally rely on the working capital position of the company as its principal security for a loan. In considering whether a bank loan is more desirable than leasing or any of the other financing methods available, the company again should consider the real cost involved, not only in terms of dollars and cents, but also in flexibility and future impact. In many instances, a compensating balance is required by the bank. If the amount on

deposit must be 20 per cent of the loan, a 4½ per cent interest rate becomes an actual rate of 5.6 per cent. There may also be restrictions on working capital levels, payment of dividends, and future debt commitments. There might also be sinking fund provisions which come out of after-tax earnings. Here a real advantage in leasing is apparent because all payments are tax deductible.

Long-term debt may trigger an increase in equity requirements and a resulting dilution of earnings. Again, under long-term debt obligations, you frequently have sinking fund commitments which must be met with 48-cent dollars. There is the further complication that a long-term obligation has been assumed to finance short-lived assets. Under both long-term debt obligations and equity financing, there are accounting, registration, and underwriters' expenses which should be figured in any cost comparison made. Covenants in long-term mortgage agreements are sometimes very restrictive and complicate the future planning of a company, especially as conditions change.

### *Lease Disclosure; Income Tax Treatment; Return on Investment*

Under generally accepted accounting principles, a lease obligation is shown only when it is material. Presumably, under S. E. C. rules, the obligation is considered material only when it equals 5 per cent of the total assets of the company or when the annual rental exceeds 5 per cent of total costs and expenses. Normally, the leasing obligation is best stated by means of a footnote in which the total annual rental payments are specified. We all know that the valuation of a company's assets is based on the going-concern concept. Those who say that the total future leasing obligation should be entered as a liability are overlooking the basis for a going-concern valuation. Under most net leases of the type referred to, the rental period may be terminated at any time after one year and any liability then existing may be fixed. In most instances this liability is extremely limited because it represents the difference between the selling price and the rental adjustment base. In the illustration used above, if the estimated selling price at the end of two years is $1,500, there is no liability since, on the contrary, an asset of $200 would result due to a refund of rental. If the selling price is estimated at only $1,200, the maximum liability to be stated is $100.

In order for a lease arrangement to qualify under Internal Revenue regulations as a "true" lease, the requirements of Revenue Ruling 55-540 must be followed. There can be, for example, no conditional sale implications. Or, stated differently, the lessor may not sell the leased unit to the lessee. There can be no excessive rental payments within a relatively short period of time and

then, in later years, only token payments during the remaining useful life of the leased unit. Title should never revert to the lessee. As long as the basic rental period conforms with the useful life of the item leased, for example, 50 months for an automobile, the Internal Revenue Service will not question the rental deduction. This conclusion is obvious because, by applying accelerated methods of depreciation, such a sum of the digits or double declining balance, the actual tax deduction for depreciation would, in the first and second years, be greater than the rental. The only tax advantage which might be claimed for leasing is that, under a closely controlled buying and selling program, the rental payments will be slightly greater than the actual depreciation and to this extent, taxes are deferred. Because the period of useful life for automobiles and trucks is so short, it cannot be said that there is any real significant tax saving, especially after three or four years.

Based on many calculations made, the net rate on an investment in automobiles is about 3 per cent. This will indicate that the gross cost before taxes for the interest element alone is about 6 per cent for large fleets of automobiles and trucks. A very interesting comparison is with a return on a highly stable preferred stock of a public utility. The after-tax rate of return on a typical preferred stock is about 4.6 per cent, or 1.6 per cent more than the 3 per cent return on automobiles. The reason is that a corporation pays an income tax on only 15 per cent of dividend income. Is there anything wrong in saying that a company might solve some of its financing problems by leasing its mobile equipment, then taking the cash and investing it in a quoted stock and later pledging the quoted stock to receive, when needed, a prime rate loan at the bank?

### *Sundry Advantages*

A great deal has been written on the advantages and disadvantages of the direct costing concept of accounting. If you are an advocate of direct costing, you will see that a tremendous benefit will be realized by using leasing to ensure an accurate and current cost classification. Also, under leasing, the sometimes very costly appropriation methods which are usually necessary to control capital expenditures within budget limitations are unnecessary. Eliminated are depreciation schedules and the subsidiary records on fixed assets. Many legal and administrative functions are performed by the lessor.

The big question is usually how long can you afford to wait before implementing an equipment modernization program. In some instances, when cost saving improvements are delayed too long, the profit result is almost disastrous.

Under leasing, the program may be undertaken with the assurance that it will not be short-lived because of a lack of funds. In larger companies, leasing gives the local manager the device he needs to exercise his primary management function by budgeting as a current expense the rental on mobile equipment he needs to do a better job and so earn more profit.

### *Effect on Financial Condition*

In Exhibit 2, there are listed some of the ratios which may be considered in a financial evaluation of leasing. Again, great care should be exercised in using these ratios. For example, it is perfectly absurd to say that, when you increase working capital, your net earnings by virtue of the increase in working capital alone will be greater by 20 per cent. In every instance, the use to which the funds are put will determine the effect on profit. The following may be noted:

1. In the illustration reflected in the figures, it is assumed that long-term debt and equity financing are used to acquire $2,000,000 of automobiles. (As explained above, the cost flow will result in an average two-year investment of $1,500,000). Without leasing, long-term debt increased from $3,000,000 to $3,750,000 and capital stock increased from $15,000,000 to $15,750,000.
2. The effect of the dilution of earnings is apparent because the amount earned on fixed assets without leasing is 10.79 per cent compared with 11.25 per cent when leasing is used. In arriving at the net earnings, it was assumed that leasing would be .5 per cent more costly than the long-term interest rate.

ACQUISITION OF ADDITIONAL MOBILE EQUIPMENT BY USING LONG-TERM DEBT AND EQUITY FINANCING

| | in 000's Without Leasing | With Leasing |
|---|---|---|
| Current assets | $15,000 | $15,000 |
| Fixed assets | 9,500 | 8,000 |
| Total | 24,500 | 23,000 |
| Current Liabilities | 5,000 | 5,000 |
| Long Term Debt | 3,750 | 3,000 |
| Capital & Retained Earnings | 15,750 | 15,000 |
| Total | $24,500 | $23,000 |

Assume sales are $34,000,000 and net after-tax income is $1,700,000 without leasing and that leasing is .5% more costly than long term rates.

| | | |
|---|---|---|
| Net Profits on tangible net worth | 10.79% | 11.25% |
| Net Sales to tangible net worth | 2.16 times | 2.27 times |

**EXHIBIT 2**

3. The sales turnover of both net worth and total assets is greatly improved. Net worth turnover by leasing increases from 2.16 to 2.27.

### *Opposing Views and the Author's Conclusions*

Opponents of leasing say that lease commitments should be capitalized, that leasing is debt, and that leasing is unfair to long-term investors. The leasing commitment should not be capitalized for the reasons given above. The obligation or the liability should always be measured in terms of the net amount, based on a going-concern valuation. If this is done, there will normally be no liability unless you contemplate bankruptcy. Leasing is not debt, because it is a current tax deductible expense for which a current service is provided. A company is not expected to record all the interest it will pay in the future on its bonds and debentures. Why should it record all the rent it will pay? Leasing is not unfair to long-term investors because the interest rates are established by investment bankers who have available all the figures on the total lease obligations.

The author's conclusions on the desirability of auto and truck leasing, on the considerations already given, may be stated as follows:

1. If funds can be utilized in the business to earn the normal rate of profit, leasing may be an excellent source.
2. Leasing of automobiles, trucks, etc. is attractive, because these are short-lived assets. Usually the use of working capital for such acquisitions hampers expansion or limits bank credit. Long-term commitments for short period requirements mean that funds are not fully utilized and there is less flexibility.
3. You alone should decide which leasing plan is best for you. Evaluate what you receive for the price you pay and consider alternate programs.
4. Large fleets may be leased at a cost which is considerably less than the dividend return received on a conservative public utility stock (only 15 per cent of corporate dividends are taxable to the receiving corporation).
5. Leasing obligations are disclosed as a footnote to the balance sheet only when material.
6. Under certain conditions, a tax advantage is realized because rental payments under some plans are adjusted at the time of disposition of the leased unit. A company using effective selling methods would receive a rental refund.

7. Leasing eliminates red tape and facilitates budget preparation and control. Rental is a current operating expense chargeable at the level where it is incurred. No capital appropriations, depreciation schedules, etc. are required.

8. Leasing obligations are not to be capitalized because the liability, if any, is measured only after deducting the re-sale proceeds. Rent is not debt, just as future interest on bonds or debentures is not debt.

# The Effect of Income Taxes on Economic Comparisons

by FRANK S. LYNDALL, JR.

MOST OF US think of the corporate income tax rate as a single rate—52 per cent—not realizing that there are actually two rates; one a 30 per cent normal tax and the other a 22 per cent surtax. The surtax is applicable to all taxable income in excess of $25,000 per year and so, for large corporations, the average income tax is very close to 52 per cent. However, the federal tax rate has not always been 52 per cent and, if we go 15 years back from the present date, we would find that there have been a number of changes in this rate. Since many projects have a life of 15 years or more, rate changes may be an important consideration.

The Federal Government is not the only taxing authority to be considered, since most states also have a corporate income tax. A total of 37 states now have income taxes ranging from 2 to 9 per cent of taxable income. The allocation of total corporate income varies from state to state but is usually a function of sales, property, and payrolls within the state, as a percentage of the company total.

The phrase "economic comparisons", as used here, refers to the relative estimate of a project with one or more other methods of accomplishing the the same end result. These other methods are known as alternatives. The difference in tax treatment of alternatives is perhaps the biggest single reason for considering taxes in economic analysis. The purpose of this paper is to discuss the various types of situations where, for one reason or another, the tax treatment of alternatives is different.

The second reason for considering taxes in economic analysis is one of comparability. Any one given project may not require an after-tax analysis to determine whether it should be rejected or accepted. Many projects, however, do. In order to use a common yardstick or set of standards, it is necessary that all evaluations be made on the same basis and that taxes be included.

The third and last reason for considering income taxes is one of timing.

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**FRANK S. LYNDALL, JR.**, Delaware Chapter, 1957, is Financial Analyst in the Treasurer-Secretary's Department of the Atlas Powder Company. Prior to his current assignment, Mr. Lyndall served as Economic Evaluation Engineer for the same company. Before this, he was with the Adhesives and Coatings Div. of Minnesota Mining and Mfg. Company, where he did raw material control work. Mr. Lyndall holds B.S. degree in Chemical Engineering from Purdue University, and M.B.A. degree from the University of Michigan.

This is particularly significant if one uses a method of evaluation which involves compound interest. The fact that tax liability is incurred at one point in time and the actual payment at another later point in time introduces a difference which can be taken into account only by considering the timing of cash flows on an after-tax basis.

### *Depreciable and Non-Depreciable Investment as Alternatives*

Depreciation is a periodic charge against revenue that distributes the first cost of a fixed asset over its expected service life. It is applicable against assets the value of which decrease with use or time. Although depreciation is reported as an expense, there is no cash outlay involved after the first year. Like other expenses, each dollar reported as depreciation reduces before-tax income by $1 and, therefore, reduces after-tax profit by 48¢. However, as this dollar is still available to be spent, the net effect is to add 52¢ to company funds.

Because it is able to charge depreciation against revenue, a corporation has available after taxes more funds than it would otherwise have had. These increased funds are due solely to the allowance of depreciation as an expense before the determination of taxable income. The incremental increase is equal to 52 per cent of the depreciation charge, the additional tax which would have been paid if pre-tax income had been increased by depreciation. Even though real costs and income may be equal on two projects, the reported net income for tax purposes will not be the same if the two projects do not have the same value of depreciable property.

Since the Government permits fixed assets to be expensed by depreciating them, you might expect that it would set some sort of rules as to how assets shall be depreciated. Bulletin F, published by the Internal Revenue Service, lists ranges of useful life for many items of equipment used by various industries. Taxpayers may deviate from this guide, but in doing so, must show cause for the deviation.

The following case, involving specific alternatives, serves to illustrate the above discussion:

> Suppose we are a manufacturer of plastic refrigerator dishes. Our production people have presented us with suggestions for some $50,000 in improvement projects which would result in cash savings in the manufacture of our products. These cash savings might be a result of decreased maintenance or lower scrap, or any one of a number of other possibilities made possible by the installation of new or special-purpose equipment.
>
> At the same time, the marketing function of our company presents a proposal for increasing profits by selling a portion of idle plant

capacity to a dairy products manufacturer in connection with promotional selling of his line. This is a proposal for a toll contract in which the manufacturer will pay all the expenses of manufacture plus a guaranteed profit. New capital required here would be in receivables and inventories, also at a required investment of $50,000. Unlike the machines which the production people would have us install, the inventories and receivables do not decrease in value, since it is considered that they can be converted into cash at any time. One further restriction limits investment to one but not both projects.

EFFECT OF TAXES ON PROFITABILITY
DEPRECIABLE VS. NON-DEPRECIABLE INVESTMENT

| Type | Fixed Plant (100% deprec.) | Inventory & Receivables (non-deprec.) |
|---|---|---|
| Investment | $50,000 | $50,000 |
| Per Year | | |
| Gross Income | 0 | $10,000 |
| Costs excluding depreciation | ($10,000) | 0 |
| Depreciation Allowance (20 yr. straight-line) | $ 2,500 | 0 |
| Total Costs for Tax Purposes | ($ 7,500) | 0 |
| Net Income Before Tax | $ 7,500 | $10,000 |
| Cash Generation (Income plus depreciation) | $10,000 | $10,000 |
| Profit After 52% Tax | $ 3,600 | $ 4,800 |
| Cash Generation | $ 6,100 | $ 4,800 |
| Interest Rate of Return (Discounted Cash Flow) | 11.0% | 8.5% |

(Numbers in parentheses are negative)

**EXHIBIT 1**

Exhibit 1 presents a comparison of these investments. The first column applies to the investment in the production facilities, the second to the investment in non-depreciable property, that is, the inventories and receivables. Equal investments of $50,000 are called for by each of the two projects. Only the latter has any gross income—$10,000 representing the profit guaranteed by the dairy manufacturer. All expenses are reimbursed in this case, as indicated by the zeros in the three items in the second column.

The projected savings on the production facilities are the result of reduced

costs, so they are shown as a negative figure under fixed plant in the first column. The depreciation allowance reduces these savings by $2500. There is no gross income for this alternative, but the negative $7500 of total costs becomes a positive $7500 net income before tax. This compares with gross income and net profit before tax of $10,000 for the non-depreciable investment.

If we stop at this point, it is pretty clear that the investment in receivables and inventories is the more desirable of the two. However, if we go one step further and recognize the fact that the depreciation was not a cash expense but is still available to us, the two projects then become identical, having a cash generation of $10,000 each. On an after-tax profit basis, the non-depreciable investment is again the more attractive, having a reported profit of $4800 as compared with $3600 for the depreciable investment. But the after-tax cash generation picture is a little bit different, since the $3600 is increased to $6100 by the depreciation allowance.

The last comparison is the first to indicate that the depreciable investment might be the more desirable project. This is confirmed by the interest rate of return on investment shown on the bottom line, which is also known as the investor's or discounted cash flow method.

Straight-line depreciation has purposely been used in this rather simple example so that the annual figures would not change. However, it is interesting to note that, if one uses sum of the years-digits depreciation which is allowed under the 1954 Internal Revenue Code, a 15 per cent interest rate of return on a depreciable investment will increase to 16 per cent, merely by changing the method of depreciation used. The reason for this is that the interest rate of return is dependent upon the time value of money. In sum of the years-digits, a faster method of recovery of depreciable investment is allowed than is permissible under straight-line depreciation.

This example was purposely constructed so that one investment alternative was made up of depreciable and the other of non-depreciable property. Obviously, in most comparisons and alternatives, the investment proposed would be a combination of the two. A difference in the relative amount of depreciable and non-depreciable property between alternatives may produce a significant difference in the return received. It is necessary to examine these projects on an after-tax basis in order to determine their relative merits.

### *Considering Depletion*

In addition to depreciation, there is one other type of non-cash expense which may be claimed for purposes of determining taxable income. This expense is

known as depletion and is available to individuals and corporations engaged in the withdrawal of natural resources. There are two methods of calculating depletion for tax purposes.

The first method is known as cost depletion. Cost depletion is much the same as depreciation, in that the amount paid for a piece of property is charged against the material withdrawn from it. For example, if we were to buy a piece of land for $100,000 and were, over a period of time, able to withdraw 100,000 tons of coal from that land, we would then be permitted to claim as an expense $1 per ton for each ton of coal withdrawn.

The other method of computing depletion is known as percentage depletion and applies to all types of depletable property except timber. Under percentage depletion, a flat percentage, as determined by Congress, of the gross income from the property is taken as the depletion deduction. It may not exceed 50 percent of the taxable income derived from the property before the deduction. Because percentage depletion ordinarily permits recovery of more than the cost of the property, it is usually used in preference to cost depletion; however, either method may be used.

Percentage depletion is, however, subject to several additional limitations beyond those so far described. The gross income from the property must be reduced by the amount of any rents or royalties which are paid by the company with respect to the property. This means that, if we take an option on a piece of property and withdraw a natural resource from it subject to a royalty which is paid to the owner, this royalty must be deducted from the gross income which we receive from the property to determine the income to which the depletion deduction is applicable. A second limitation states that the gross income is limited to the value of the natural resource in its least-processed salable form. It is specifically defined, in the case of oil and gas wells, as the amount for which the taxpayer sells the oil and gas in the immediate vicinity of the well. For other types of natural resources, no such definition occurs in the Internal Revenue Code and it has, therefore, been the subject of a number of disagreements with the commissioner.

The flat percentage mentioned previously runs from 5 to 27½ percent of gross income from the property. Each type resource is assigned a set percentage, with the 27½ being that applicable to oil and gas wells. The allowance for depletion has no relation to the amount paid for the property nor to the amount paid for the option to withdraw material from the property of others. Certainly, consideration of depletion is a very necessary thing when deciding between investments using natural resources and investments in other types of products. This can only be done on an after-tax basis.

### *Foreign Investment and Taxes*

The third area in which taxes make a difference is that of foreign investment. Sooner or later, it becomes necessary for many companies to consider whether they will export, license or manufacture abroad in order to provide their products for the foreign market. In examining these alternatives, more than the tax laws of the United States are applicable. An income which is received from a foreign country is subject not only to the taxes of that country but also to those of the United States before it can be used by the American company in its business or can be distributed to its stockholders. In addition to the different types and rates of tax which prevail in many foreign countries, there are also some unusual treatments with respect to income distributed to the United States from foreign operations. Normally, the United States Government cannot tax earnings of foreign corporations from operations outside the United States. Profits from investments in foreign subsidiaries are therefore not subject to United States taxes until they are returned to the parent United States

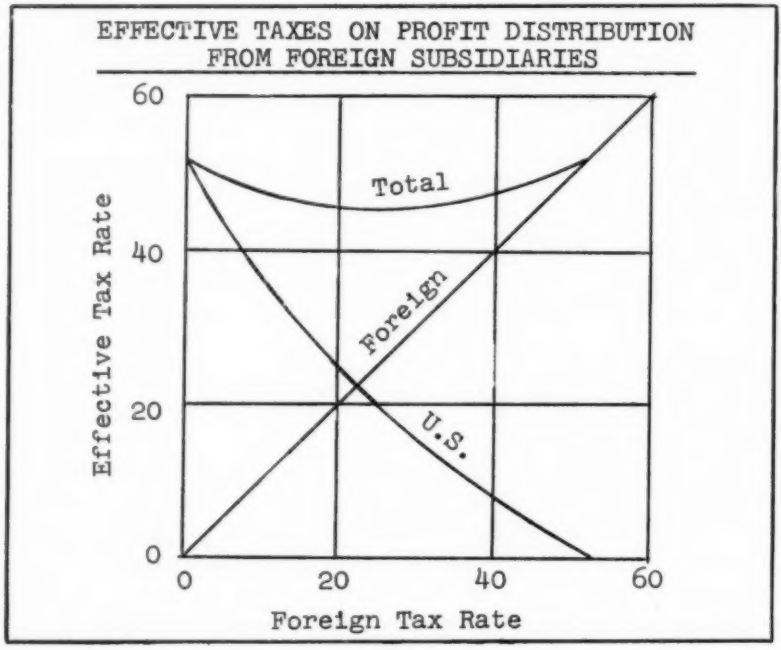


**EXHIBIT 2**

company as dividends. When distributed, such profis are subject to ordinary corporate income taxes but credit is allowed against the United States tax for any foreign taxes previously paid.

Exhibit 2 shows the total effect of this difference. The effective rate—United States plus foreign—is plotted against the foreign tax rate. The current 52 percent corporation income tax on United States profits is the total effective tax rate for zero foreign tax rate. As the foreign tax rate increases, the United States tax rate decreases faster, resulting in a total of less than 52 percent. The minimum total tax is about 45 percent at a foreign tax rate of 26 percent. For foreign tax rates between 26 percent and 52 percent, the total tax rises gradually but is still less than the United States rate. As long as the foreign tax rate is less than the United States rate but not 0, total tax is less than the United States tax alone on the same amount of domestic income.

On foreign investments, this tax advantage results in a real gain in profitability. As the simplest method of recognizing the advantage, calculation of profitability should, therefore, be made after taxes.

### *Taxes Payable as a Part of Working Capital — An Illustration*

Another area in which taxes make a real difference is that of working capital. There are very few projects that come along that do not involve working capital in some way. As long as a project is profitable, total company taxes are increased. Since the tax on the sale of a product is rarely paid to the government before it is collected from the customer, there is a lag in time created during which the government effectively lends money to the corporation. This money is shown on the balance sheet as accrued taxes payable. An indication of the importance of this item is indicated in the statistics on the chemical industry as of December 31, 1956, which were reported in *Chemical and Engineering News* in its May 20, 1957, issue. In this issue, income tax accruals were shown to be 7.3 percent of the total assets of the chemical industry. This item was only slightly less than the cash or the government securities shown as current assets in the same data.

The averages for the industry, with respect to assets, include within cash and government securities a certain amount of funds which are held for reasons other than actual need. Since these funds are actually in excess of the requirements of the business, the amount of cash or government securities which a corporation keeps on hand might be described as being directly proportional to the amount of sleep that the company treasurer gets. A company with minimum reserves of cash and short-term securities must keep constant track of where its

money is at all times. In some cases, tax accruals may be sufficient to finance all of the current assets required by a particular project.

To illustrate the importance of tax accruals, consider the following example on ammonia manufacture. Fixed investment and operating data are shown in Exhibit 3. The capital investment of $6,800,000 includes service facilities and is for a non-integrated operation, i.e., there are no facilities for ammonium nitrate, nitric acid, or other products attached or adjacent to this plant. Two modifications have been made in the data as originally published. The first was to use 4 percent of capital investment for all maintenance rather than to use 2 percent on the service portion. The second was to eliminate interest which is not properly a cost of manufacture.

The manufacturing cost of $35.65 per ton compares with a market value of about $80.00 per ton. This means that the gross profit on ammonia is more than 50 percent of the selling price. It includes, in addition to profit, the selling expense, company overheads, and freight equalization which must be made on the product. This last item may amount to as much as $10.00 per ton for some companies. If we assume temporarily that the working capital required is either

MANUFACTURING COST OF AMMONIA
VIA PRESSURE REFORMING OF NATURAL GAS*

Plant Capacity - 200 tons/stream day
Capital Investment - $6,800,000 (non-integrated plant)

| Materials | Unit Cost | Units/Ton | Dollars/Ton Ammonia |
|---|---|---|---|
| Natural Gas | $0.312/MSCF | 21.4 | 6.67 |
| Catalyst | | | 0.60 |
| Other Chemicals | | | 0.32 |
| Total Materials | | | 7.59 |
| **Utilities** | | | |
| Natural Gas | $0.30/Mil.BTU | 20.1 | 6.03 |
| Electricity | 0.008/KWH | 222.0 | 1.78 |
| Treated Water | 0.13/M gal. | 0.93 | 0.12 |
| Raw Water | 0.05/M gal. | 2.1 | 0.10 |
| Total Utilities | | | 8.03 |
| **Labor and Supervision** | | | |
| Operating Labor | $2.74/man-hr. | 0.885 | 2.43 |
| Maintenance, 4% of Investment | (40% mat'l., 60% labor) | | 3.92 |
| Services and Administration | (40% of total labor) | | 1.91 |
| Total Labor and Supervision | | | 8.26 |
| **Fixed Charges** | | | |
| Depreciation, 10% of Investment | | | 9.81 |
| Taxes, Insurance, 2% of Investment | | | 1.96 |
| Total Fixed Charges | | | 11.77 |
| **Total Manufacturing Cost** | | | 35.65 |

* Eickmeyer, A.G. & Marshall, W.H., Jr., "Ammonia Synthesis", Chemical Eng. Prog., 51, p. 418, September 1955.

**EXHIBIT 3**

zero or at most a very small percentage of fixed investment, we find that a 10 percent after-tax return on investment will require a profit of $1,020,000 per year after taxes of $1,110,000. With this information, we now have enough data to estimate the working capital which is shown in Exhibit 4.

WORKING CAPITAL REQUIREMENTS
AMMONIA FROM NATURAL GAS - 69,350 TONS/YR.

| Assets | | Liabilities | |
|---|---|---|---|
| Cash (13% of sales) | $720,000 | Payables (40 da. @ 200T/D @ $14.70/T) | $120,000 |
| Receivables (10 da. @ 200T/D @ $80/T) | 160,000 | Accrued Taxes Payable (7 mo. @ $92,000/mo.) | 640,000 |
| Inventories (20 da. @ 200T/D @ $25.64/T) | 100,000 | | |
| Total Current Assets | $980,000 | Total Current Liabilities | $760,000 |
| Net Working Capital | $220,000 | (4.0% of sales) | |

**EXHIBIT 4**

The current assets which are required to operate such a plant are normally considered to be cash, receivables, and inventories. The receivables portion of this investment is pretty closely regulated by industry practice, in that sale of ammonia is subject to a one percent discount if paid within 10 days and the practice of most consumers is to accept such a discount. Ten days' sales at 20 tons per day and $80 per ton is about $160,000. Looking next at inventories, we find that there is no raw material inventory because this particular product is made from natural gas. The manufacturer is not billed for the gas until sometime after it is actually used in his plant. The investment of $6,800,000 previously described includes storage for 10 days' production. To the plant storage has been added an equal amount to cover storage in tank cars and in-transit shipments. Inventories are shown at out-of-pocket cost, which is the manufacturing cost less depreciation.

This leaves only one item—cash—to be accounted for in the current assets which must be furnished to this operation. If the operation were entirely uniform, no cash at all would be required. Some companies, such as General Electric, pride themselves in being able to get along with as few as 6 days' sales as their cash requirement. For purposes of this evaluation, let us again look at the industry averages. Cash and government securities were 2.9 billion dollars as compared with sales of 22.2 billion. This is about 13 percent of sales. Some of the 13 percent probably represents idle capital but all of it has been included.

Outside of the taxes, the biggest single payable is for natural gas. The

manufacturing cost estimate shows the cost of utilities at $14.70 per ton. Utilities are normally billed on the first of the month following use. Terms are net 20 days, so that the average payable for utilities is about 40 days. The other payable is the tax accrual. It usually averages 7 months' total taxes. The first corporate income tax payment is due on September 15 of the year in which the income is earned. The amount of the payment is 25 percent of the company's estimated total tax liability for the year and, therefore, represents the tax on the profits earned during the first quarter of operations. This means that, on the average, this tax payment is being made on sales which were made about 7 months previously. The other payments of taxes are made at three-month intervals, one on December 15, one on March 15 of the year following, and the final one on June 15. These are also one-quarter of the tax liability. If the taxes are paid uniformly, they continue to represent quarterly sales, although the receipt of income by a company is not uniform over the year. It is also true that the estimated tax which is paid during the current year and prior to the filing of the corporate return need not be exactly one-half of the total tax liability incurred. The corporate income tax law requires that these payments be within 30 percent of the actual liability. This takes care of the non-uniformity of the cycle.

It is plain that the effect of accrued taxes payable on the amount of working capital required by a corporation is considerable. The rules of thumb which are commonly used for estimation of working capital do not in any way account for this fund of accrued taxes. Again, however, if taxes are not considered at all in making engineering economic studies, this effect on working capital cannot be included and the investment base might be unduly large, since excess working capital would be provided.

### *Why Analyses Should Be on an After-Tax Basis*

In summing up, we have considered three reasons for including taxes in economic analysis. They are for comparability, in order to analyze alternatives, and in order to recognize the patterns in time which are different between projects. In doing so, we have considered some four areas which are specifically applicable to these reasons. There were depreciable vs. non-depreciable property, depletion, foreign investment, and taxes payable as a part of working capital. Benjamin Franklin is credited with making the statement that the only things that are certain are death and taxes. Just as the deaths of others do not affect all of us in the same way, neither do taxes affect all projects in the same way and, therefore, economic analyses must be made on an after-tax basis.

# *Untapped Source of Better Reporting*

by WILLIAM M. LEARY*

ALMOST EVERY ISSUE of the *Bulletin* or of any other good accounting magazine will have at least one article the title of which falls in the general field of reporting to management. This is as it should be, for reporting to management is the accountant's main reason for existence. All his other duties are important, but not nearly so important. The articles mentioned go into every angle of the reports to management: how the accountant can best select the important points and highlight them, how he can point up the pertinent variances, and how he can eliminate useless detail. Throughout these articles, we find the accountant determining what will be taken from the records and shown in the statements. But it is management the statements are prepared for. Still it is a rare article which will point out to management what possibilities of information are in the books, what combinations of reports are available at the same cost as the present reports.

The almost uniform slant of this type of article has a reason. Accountants are not so convinced of their own selection ability as to think theirs is the only sound choice in selection of report forms and contents. In a few cases, perhaps, the accountant comes to feel that he is the only one who can decide what reports can be produced and what information is important but, in many cases, the accountant accepts the job of selection because he is *told* that he is the sole expert. We are missing a point here. There is a great talent source for this selection job that too often goes untapped. That talent source is management. This is a pronouncement which will cause many, or most, accountants to wince — heartily. We can hear it now, "What about the time we spent three days on _____ _____", or, "What about the monthly (or weekly or daily) report on ____ ____, when we could just as well ____ ____" or, "We could run this accounting department a lot cheaper if we didn't have to furnish all these silly ___ ___".

Is there a remedy for this situation? Yes, there is. The remedy is a thorough, thoughtful, nontechnical explanation of the company's record keeping, so that management can know what is available. This is not an easy prescription to fill. We are not talking about a procedures handbook or an accounting text or anything like it. What is needed is a plain language description of what the specific ac-

*Assistant Controller, Columbia University, New York, N. Y.

counting plan can furnish a specific management. There should be a broad description, later filled in by details, of what is put into the records and what can come out. The cost of the minimum records and of any extras or frills or necessities. At the same time, management can decide what reports are costing more than they are worth.

The accountant should come out of his accounting shell when he writes the story of the records and possible reports. Some possibilities may not be evident, but he should search them out. In some cases, possible expansion should be mentioned, but let management decide. We are not showing origin of orders by territory. Should we? We could speed some reports at increased cost. Should we? We could give rough reports and refine them later. Is that too dangerous?

As in any careful investigation of this kind, the accountant will learn something. He may learn of some things he himself has been doing that will need pretty strong defense when the management starts asking questions. And, of course, just this one review is not going to be a permanent appraisal. The accountant will have to keep on constant guard to suggest needed reports and to avoid needless costs.

The best that can come of this plan may be very good indeed. The accountant can get to talk over with management what he thinks is the best type of information. Management can tell its needs with a fuller knowledge of what is available and what the information may cost. With a more complete understanding, some reports can be put on a spot basis, prepared only under certain conditions. Some reports will be eliminated, some expanded. A fine outcome of such an informed kind of team work would be regular review of all reports with a view to improvement, elimination, or initiation of a new report for a new need.

The accountant may feel that he is giving some of his domain to management when he follows these suggested steps. It seems to the writer that the accountant may at the same time be gaining a great deal more than he gives up. By learning more about the needs of management, by helping management select the best buys in accounting information, the accountant is, himself, becoming part of management.

# Budgeting Divisional Performance

by EARL C. ROGNESS*

THE ARTICLE by Allen R. Drebin in the February 1959 issue of *Bulletin* entitled "A Proposal For Dual Pricing Of Intra-Company Transfers" brought forth some interesting points on various methods used in pricing products. The following may be a variation but is submitted as a possible simple sound accounting procedure for pricing, where the entire production of each division is a part of the over-all operation with no outside purchases made of similar processed product.

As a part of budget preparation, the total cost excluding intra-company profits is summarized to arrive at the total operating profit. This profit is then measured as to return on investment and percent to sales. Divisions are listed showing investment in each and the budgeted profit is allocated to each division as its contribution to the whole.

The company budget picture might be as follows:

*Budgeted, Over-all Operations*

| | | | |
|---|---|---|---|
| *Sales* | | $800,000 | |
| *Costs* | | | |
| Materials Dept. A | $100,000 | | |
| Labor | 200,000 | | |
| Supplies | 40,000 | | |
| Plant Overhead | 100,000 | | |
| Selling Expenses | 100,000 | | |
| Adm. Expenses | 100,000 | 640,000 | |
| Operating Profit | | $160,000 | |
| Total Capital Investment | | $1,600,000 | |
| Return on Investment | | | 10% |
| Percent to Sales | | | 20% |

* Auditor, Pendleton Woolen Mills, Portland, Oregon.

Then the following table might illustrate the terms in which divisional profit is budgeted:

| *Investment* | *Department* | *Costs* | *Sales* | *Profit* | *Profit Per cent To Price Of Product* |
|---|---|---|---|---|---|
| $ 600,000 | *Dept. A* | | | | |
| | Raw Material | 100,000 | | | |
| | Labor | 100,000 | | | |
| | Supplies | 20,000 | | | |
| | Overhead | 50,000 | | | |
| | | 270,000 | 330,000 | 60,000 | 18.2% |
| 400,000 | *Dept. B* | | | | |
| | Product from Dept. A | 330,000 | | | |
| | Labor | 100,000 | | | |
| | Supplies | 20,000 | | | |
| | Plant Overhead | 50,000 | | | |
| | | 500,000 | 540,000 | 40,000 | 7.4% |
| 600,000 | *Dept. C* | | | | |
| | Purchases from Dept. B | 540,000 | | | |
| | Selling Expenses | 100,000 | | | |
| | Adm. Expenses | 100,000 | | | |
| | | 740,000 | 800,000 | 60,000 | 7.5% |
| $1,600,000 | TOTAL COMBINED | | $800,000 | $160,000 | 20% |

This puts each division on an equal basis as to its share in the return on investment. It is then the responsibility of the division manager to obtain results in line with budget or improve its profit by efficient operation, careful buying of supplies and reducing overhead costs wherever possible.

# *Questionable Approaches to "LIFO"*

by ERNEST W. THORN*

IN AN ARTICLE in the *N.A.A. Bulletin* for March, 1959, Ralph M. Marsh, using the title "Which Approach to Lifo Valuations?" questions several of the techniques being used in the dollar-value method of determining "lifo" inventories. While Mr. Marsh does not take a definite stand against a liberal use of dollar-value techniques, he does express doubts on several techniques by his questions, closing with this query:

> "Is it now just as 'generally accepted' to emphasize the value of the inventory 'dollar' as it has been to emphasize total unit 'cost?' If this is true, can replacement dollar depreciation and 'next-in-first-out' be far behind?"

Presently our company is studying the advisability of going "modern" by extending our use of "lifo" from a few major raw materials on a unit method to essentially all inventories by using the dollar-value method. Among other questions we are wondering whether we should limit "lifo" to raw materials and raw material content in work-in-process and finished products since, in the chemicals industry, future technological improvements may offset labor and burden increases from inflation.

Mr. Marsh's article comes along at an appropriate moment for us, since it illustrates how we can "have our cake and eat it too" by using a "price approach"** rather than a "cost approach"**. His comparative illustrations of the two approaches show how, with the "price approach," a reduction in cost due to technological improvements can bring "lifo" values below base period costs even though the quantity of inventory on hand is the same. This reduction in value below the "lifo" base is compounded in a future illustration Mr. Marsh gives of a "burden application approach"**. As pointed out by Mr. Marsh, the use of the "burden application approach" completely ignores the usual experience, in which technological savings in direct labor through mechanization and/or automation are partly offset by increased burden.

The original objective of "lifo" aimed at eliminating from earnings the distortions in income that most noticeably occur in the nonferrous metal and tanning industries where inventory write-ups, prior to the adop-

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* Manager, General Accounting Section, Atlas Powder Co., Wilmington, Del.

** Definitions on the following page.

tion of "lifo", inflated earnings in certain years only to have inventory write-downs deflate earnings in corresponding amounts in subsequent years. When Congress granted these industries, and later all business, the right to use "lifo" as a means of arriving at published and taxable income, this right was granted as a means of relief from these aggravating effects of widely fluctuating prices so that taxes did not have to be paid at top rates on increased inventory values in years of rising prices and then partly recovered in a later year when prices dropped.

It does not seem rational to assume that tax relief is needed or was intended for price increases in the labor content to the extent that such increases are offset by technological savings. In industries experiencing technological savings, I am inclined to recommend limiting the use of "lifo" to raw material and to the raw material content of work-in-process and finished goods. However, I can see where the use of the "price approach" may be debatable. On the other hand, the results of the "burden application approach," as described in Mr. Marsh's article, may be sufficiently contrary to the facts to suggest that its use would be unethical.

In the interest of promoting a greater degree of accounting consistency among businesses, these questions should be resolved by the most acceptable and unbiased authority available. Until this is done, it seems to me, the term "generally accepted accounting principles" has one more area in which it has very limited meaning.

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DEFINITIONS

*Price Approach* — valuation of inventory items at current production usage quantities times base prices.

*Cost Approach*—valuation of inventory items at base production usage quantities times base prices.

*Burden Application Approach*—valuation of burden content of inventory by applying the burden rate in the base period to the labor content as determined by the "price approach".

(Reference is also made to Ralph M. Marsh's article "Which Approach to Lifo Valuations?", mentioned above.)

# Beyond These Covers

## *Books*

### Industrial Accounting

*Samuel W. Spechrie, Prentice-Hall, 70 Fifth Avenue, New York 11, N. Y., Third Edition, 1959, 583 pp., $10.*

A conventional topical approach is used in this text, first issued in 1942 and revised in 1947, in which step-by-step disclosure of complexities in 35 chapters runs from the books of original entry through closings, depreciation, material, labor and burden accounting, etc. to cost accounting for joint products and uses of cost accounting in policy formulation. The book is directed to "those who want to learn to use rather than to do, accounting."

### Auditing — Principles and Case Problems

*Arnold W. Johnson, Rinehart & Co., 232 Madison Avenue, New York 16, N. Y., Revised 1959, 684 pp., $7.50.*

The cases provided in this text appear with each chapter. The volume is one which, mainly, teaches public accounting and the chapters are topical by asset and liability items, with income and expense also given a chapter and three devoted to audit reports and illustration of them. "Application of Statistical Methods to Auditing Procedures" is the closing subject and deals with sampling techniques. An audit program and an internal control questionnaire are provided as appendices.

### Programming Business Computers

*McCracken, Weiss, and Lee, John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y., 1959, 310 pp., $10.25.*

Written for students and accountants who want or must have more than just the idea of how computers are programmed, this new text starts with "the data processing problem", "files", and "flow charting" and then proceeds to the equipment, its use of codes, output and input devices, and actual programming. Attention is also given to economical use of computer time, memories, auditing and like pertinent topics.

### Machine Accounting and Data Processing Semi-Annual (Vol. VIII)

*Gille Associates, Inc., 956 Maccabees Bldg., Detroit 2, Michigan, 1959, 171 pp., $9.*

Many general and a large number of papers relating to specific applications of electronic (including tabulating) equipment are included in this volume, with text and prolific illustrations on its large-size pages. Among the papers in the general group are "How Much Mechanization Can You Use?" "Automation Comes to Main Street," "You're Not Too Small for Data Processing" and "Data Processing — The Manager's Best Friend".

### Yardsticks for Industrial Research

*James Brian Quinn, The Ronald Press Co., 15 East 26th Street, New York 10, N. Y., 1959, 224 pp., $6.50.*

Subtitled "The Evaluation of Research and Development Output", the present work is thoughtful and comprehensive. Several types of research are distinguished — offensive, defensive and fundamental. A key chapter is "Evaluating Management of the Research and Development Program". The author can be claimed also as an N.A.A. author (see his article, "A Study of the Usefulness of Research and Development Budgets" in the *N.A.A. Bulletin*, September 1958).

### Analyzing and Improving Marketing Performance

*American Management Association, 1515 Broadway, Times Square, New York 36, N. Y., Paper Bound, 1959, 139 pp., $3.75.*

Subtitled, "marketing audits in theory and practice" and identified as Management Report No. 32, this publication brings together the group of addresses presented at A.M.A's marketing conference held last February. These talks are grouped in three sections devoted, respectively, to "the marketing audit approach", "evaluating specfic marketing activities" and "company studies", three in number. Included as one of the studies is a group of three papers by representatives of the American Telephone and Telegraph Co. on "Analyzing Sales Force Effectiveness."

### Records Retention — A Practical Guide

*W. E. Mitchell, Ellsworth Publishing Co., 314 Newcastle Road, Syracuse 4, N. Y., 1959, $5.*

It is noted at the start of this compact book that the only two reasons for keeping records are the organizational needs of departments and compliance with statutes and regulations. The author feels that these reasons should be "kept separate" and neither should be overdone. Coverage of types of records and retention requirements is substantial, with the emphasis throughout on the prevention of accumulation of bulky and needless records. A *Bulletin* author, Mr. Mitchell contributed a short article to the September 1958 issue, entitled "Let's Get Practical About Records Retention."

### The Office Supervisor

*Niles, Niles & Stephens, John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y., Third Edition, 1959, 307 pp., $5.95.*

It is noted prefatorily that "automation is advancing upon the office like a bull-dozer". However, the main emphases of previous editions (first publication in 1935) are retained in this newest one. Thorough factual consideration of tasks is included but a philosophical viewpoint, implied in the subtitle, "His (the Supervisor's) Relation to Persons and to Work", is evident throughout.

### Introduction to Business

*R. E. Glos and Harold A. Baker, Southwestern Publishing Co., Cincinnati, Ohio, 4th Edition, 1959, 692 pp.*

A revision of a text for a "first course in business on the collegiate level", this volume runs a long gamut of the necessary business-related topics and covers, among others, marketing, personnel and production, location and layout, financing, managerial controls (here accounting comes in, including statistics, budgeting and forecasting) and law, regulation and taxation. The subtopic of "careers in business" occupies an initial chapter and there is an appendix devoted to "opportunities in business."

### Investing for a Successful Future

*Babson & Babson, MacMillan Co., 60 Fifth Ave., New York 11, N. Y., 1959, 312 pp., $4.95.*

A "new guide to family investment planning," the present volume is certainly neither an accounting nor a business management text. Nevertheless, it is written against a background of economic conditions related to both investment and consumption and thus has relevance to an accounting readership, both personally and professionally.

### A System Integrating Direct Costings Standard Costs, Flexible Budgets and Return on Investment

*Harry P. Kelley, Business Budgeting, June, 1959.*

An extensive paper and fully illustrated, this article portrays a system of control and appraisal which leaves no stone unturned to get at inefficiencies and to afford performance measurements.

### Budget Organization and Administration

*T. P. Boyle, The Controller, July, 1959.*

A once over of the elements in a plan of budgeting which may make or break it as an effective tool is supplied in this article. "Selling" of the budget, policy as to "target" ("tight, loose or just right"), the imposition of procedures, etc., are among considerations dealt with.

### Profit Planning

*Marshall K. Evans, Harvard Business Review, July-August, 1959.*

Very concrete in its approach and "taking off" from a base of cost analysis in depth — product, committed and managed, with detail — the paper here presented utilizes graphic analysis to light up current and proposed profit patterns. (The author addressed the 1959 Annual Conference of N.A.A. on aspects of his present topic.)

### Pricing Intra-Company Transfers

*Harold Bierman, Jr., Accounting Review, July, 1959.*

"The admitted inaccuracies (of known transfer price methods) must be weighed against the unmeasurable gains resulting from having decentralized operation and decision making" is a closing statement of this reflective article, and the author adds, "the greater the significance of the intradivisional transfers the more unreliable are the measures of the income of the divisions."

### Increasing the Utility of Financial Statements

*Charles T. Horngren, The Journal of Accountancy, July, 1959.*

Reported in this article (with commentary) are the results of a questionnaire addressed to 350 security analysts, of whom 120 replied. One of the findings is that fund flow statements are widely desired. The author carries his paper to a suggested combination of income and funds statements.

## ADDRESSES OF PERIODICALS

### Business Budgeting

*528 W. 12th Street*
*Covington, Kentucky*

### The Controller

*2 Park Avenue*
*New York 16, N. Y.*
*Single copy: 65¢*

### Harvard Business Review

*Soldiers Field, Boston 63,*
*Mass., Single copy: $2.*

### Accounting Review

*c/o Carson Cox,*
*College of Commerce,*
*Ohio State University,*
*Columbus 10, Ohio,*
*Single copy: $1.50.*

### The Journal of Accountancy

*270 Madison Avenue,*
*New York 16, N. Y.,*
*Single copy: 85¢.*

# *Reporting to Industry and the Government*

by JOHN F. O'BRIEN*

ONE of the accountant's primary functions is to continually re-examine and evaluate the reports he produces. Frequency, interest, utility, conciseness, highlights, response, volume, cost, and distribution are features covered when the accountant inspects and appraises his product. Assisting the accountant in this never-ending chore are innumerable articles, books, seminars and conferences on the subject of reports. However, it is difficult to locate literature in the specific field of reporting to trade associations and government agencies.

Many general reporting principles cannot be applied to the subject being covered here, thus enabling us to isolate it from the broad field of reports. Reports to trade associations and government agencies are unique in many ways, a few of which are as follows:

1. Reports are frequently obligatory.
2. Subsequent processing of report data not known in many cases.
3. Usefulness of reports not always known.
4. Format and schedule of reports often command improvisation of records and schedules by reporting unit in order to comply (e.g., splitting or combining accounts and adjusting from fiscal to calendar year basis).

Summarizing these four items, we can say that the business world has assumed many costly and mushrooming reporting obligations over which it has little or no control.

Can we expect these obligations to expand further? In answer, it is doubtful that the Federal government will relinquish its dubious right to play with the business cycle. Informational tools will always be necessary either to fight or whitewash inflation, depending upon the wind direction in our political circles. Less facetiously, accurate data on international balance of payments will continue to play a part in foreign policy. On the other side of the fence, the business world, with its greater emphasis on market research and long-range planning, will continue to seek more industry-by-industry information from its many trade associations. Business will seek more up-to-date market and population trends and gross national product data from government sources. It seems

* Administrative Assistant to the Controller, West Point Manufacturing Company, West Point, Georgia.

reasonable, therefore, to expect continued expansion in this field of reporting.

The accountant's role in this area is a natural one, for he prepares many of the reports we are discussing. He is in a position and should make an effort to keep management informed on the difficulty and cost of complying with such reports. The accountant should constructively present his views on inadequacies or unreasonableness in regard to requested information. Management, through its representation on statistical committees of trade associations and bodies such as the Advisory Council on Federal Reports, would then be able to exercise more control over this reporting obligation. The result would surely be a greater awareness of the problems involved and of the potential benefits available to both suppliers and collectors of information.

Trade associations and the Federal government have generally shown a keen awareness of these problems. Specifically, the Bureau of the Budget deserves recognition for its efforts in this field. Although often mistakenly understood to represent a staff of bookkeepers, the Bureau exercises a vigilant watch and control over government agency requests of businesses and individuals. It might be well for this Budget Bureau example to be mirrored in the efforts of businessmen, and accountants in particular, as they carry out their reporting functions.

The purpose of these remarks is to call attention to a matter which is rapidly crystallizing into a challenge for every accountant and a matter which has been somewhat shadowed in the extensive literature on report evaluation. In conclusion, the job of reporting to trade associations and government agencies can be likened to most investments. The business world is definitely investing significant amounts of time and effort in this area; therefore, it seems little more than good business sense to seek a maximum return from this investment.

NATIONAL ASSOCIATION OF ACCOUNTANTS
NAA
1919